

HISTORY OF THE NATIONAL ASSOCIATION FOR
RESEARCH IN SCIENCE TEACHING
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Karen Stiles Murphy
May 1992


HISTORY OF THE NATIONAL ASSOCIATION FOR
RESEARCH IN SCIENCE TEACHING

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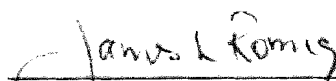
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HISTORY OF THE NATIONAL ASSOCIATION FOR
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An abstract of a dissertation by
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May 1992
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The purpose of this study was to collect and organize historical information about the National Association for Research in Science Teaching (NARST) and then to construct a written history of the organization. The history began with events preceding NARST's founding in 1928 and continued through many portions of its first 64 years. The three main foci were the membership and the two NARST activities the membership deemed most important--the annual meetings and the journal publications. From 1930 to 1961, Science Education was the Association's official journal. In 1963, NARST launched the Journal of Research in Science Teaching (JRST). Often throughout NARST's history, activities within the organization were influenced by what was happening within the nation and the world.

The search for relevant information sources included personal libraries and files of NARST members; the card catalogs of Drake University in Des Moines, Iowa, and Teachers College, Columbia University in New York City; several indexes and abstracts; computer searches; interlibrary loans; bibliographic references appearing in pertinent articles; recommendations of knowledgeable individuals, several interviews, and specially designed questionnaires.

The historical method was employed in this research study. Historical sources were evaluated using both external and internal criticism.

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Chapter I

INTRODUCTION

"Organized to improve science teaching--through research," is the slogan of an association founded 64 years ago by 17 individuals who met in Cambridge, Massachusetts. On February 29, leap year 1928, after two days of meetings, a newly-founded organization had 16 members, an executive committee, a name, and a purpose. The name for this new group was the National Association for Research in Science Teaching. Its purpose was "to promote scientific study of problems of science teaching and to disseminate the results of such study."¹

Words from the opening of Plato's Republic aptly describe the members and activities of the National Association for Research in Science Teaching (NARST): "Having torches they pass them one to another." Through the first 64 years of NARST history, "torches" of encouragement, knowledge, insight, sharing, and research frontiers have passed from peer to peer, professor to graduate student, researcher to practitioner, writer to reader, and Association to affiliate organizations.

One of the earliest summaries of NARST contributions, that seemingly supports the preceding, was found in the October 1953 NARST Newsletter. George G. Mallinson (1954 NARST president) related that

During the last month your president had the opportunity to do a little scratching around to find out just where the NARST stands in the picture of all science education. It is a matter of real pride to announce a few items that were discovered.

1. Over 90% of all published research in science education bears the name of a member of NARST.

2. About 80% of all published research is found in Science Education [NARST's official journal at that time]. If any other journal were to have attempted to have published that research, the journal would probably have to double its number of issues or pages per issue. It is quite clear that for science education research Science Education is irreplaceable.
3. While this item may be subject to some error, it seems that over 2/3 of the science education positions are filled by NARST members.
4. Year after year most of the key persons in the CASMT [Central Association of Science and Mathematics Teachers], NABT [National Association of Biology Teachers], and NSTA [National Science Teachers Association] have been NARST members.
5. Nearly all of the "Milestones in Research" in science education, principles, attitudes, problem solving, etc. have been reported at our annual meetings.²

A more recent quotation, taken from an early 1980s membership brochure, attested: "Members of NARST (on per capita basis) have influenced more curricular changes and teaching practices in science education (elementary, secondary, and post-secondary) than any other group of people."³ Another quotation from the brochure described NARST as an organization where "researchers and practitioners are productively discussing the merits of funded projects--projects responding to the 'crisis' in science teaching in the United States and around the world."⁴

In March 1977, Willard J. Jacobson of Teachers College, Columbia University, presented NARST's Golden Anniversary address. He affirmed that in NARST's history there are:

Lofty aims and important accomplishments, exciting programs and lively discussions, long hours of committee work and important changes in policy, reports of significant research and illuminating analyses of research, penetrating criticisms and bruised egos, long nurtured friendships and much cooperative work, widespread influence upon science learning and instruction but not as much as we would like, survival of crises and the glow of good times--it is a long and fascinating history. It is a history that should be studied for there is much to be learned.⁵

The 1990-1991 membership directory of NARST listed 1,050 persons, including "all members in 1989 and 1990 plus non-member 1990 conference attendees."⁶ Among these individuals were persons from each of the 50 states, Washington, D.C., Puerto Rico, and 38 different countries. Approximately 160 persons originated from foreign countries.

Since NARST's founding in 1928, members have been involved internationally in science education (Table) and have worked "with prominent people throughout the world on research projects."⁷ The membership has also collaborated "with such affiliated organizations as the National Science Teachers Association (NSTA) and the American Association for the Advancement of Science (AAAS)."⁸ From the early 1930s at least into the 1960s, membership in NARST resulted in fellow status in AAAS. Members of NARST became chaired the education section of AAAS and became officers in numerous other education, science, and research organizations.

Information from the last half of the 1980s indicates that between 40%-60% of the membership attended the annual conventions. Since 1970, these annual meetings typically were held in conjunction with NSTA and American Educational Research Association (AERA) on an alternating-year basis. At the 1989 meeting in San Francisco, 350 (42%) members attended a three-day program consisting of 252 research papers, two general sessions on cognition and motivation-achievement research, and 78 posters papers.⁹ This was quite a contrast to the first planned program meeting (1929) at which 22 (67%) members

attended a three-hour program comprised of a summary report and seven research papers.

Prior to the 1960s many of the papers presented at the annual meetings were published in NARST's first journal, Science Education. From 1969-1990 abstracts of most papers and symposia presented at these annual meetings were submitted to the Educational Resources Information Center (ERIC) Clearinghouse for Science, Mathematics, and Environmental Education to be edited and bound together in a publication. From 1969 through 1985 this publication was known as Abstracts of Presented Papers. Beginning with the 1986 issue, the title was changed to Science Education Information Report. However, due to the increasing production costs, ERIC directors felt unable to continue the abstracts. Alternative methods for publishing the abstracts have been utilized and are being explored.

From 1929-1961 Science Education was the official Journal for NARST. In 1963 the Association launched a new journal, the Journal of Research in Science Teaching (JRST), published by John Wiley and Sons. The first JRST volume consisted of four issues averaging 100 pages each. Through the years the number of articles submitted to NARST journal editors increased significantly. The 1990 JRST publication included nine regular issues averaging 102 pages and one 158-page special issue on concept mapping. In studies for the AERA, JRST has been ranked "as one of the highest quality educational journals" and as "clearly the top research journal in science education."¹⁰

Another regular publication effort in which NARST was involved was annual reviews of science education research. Prior to World War

II, Francis D. Curtis recruited fellow NARST members to assist in identification and selection of research to be included in both his 1931 and 1939 Digests of Investigations in the Teaching of Science. Following the war, the reviews for research at the elementary, secondary, and college levels were conducted in cooperation with the U.S. Office of Education. From the late forties through the fifties the reviews were annual. Through most of the sixties they were biennial. When the U.S. Office of Education ceased their sponsorship about 1967, and ERIC became involved, the reviews again became annual. Since 1947, the reviews were published in Science Education and, with few exceptions, were also presented at NARST annual meetings.

Since the mid-fifties, newsletters, which became quarterly publications, also described developments in research and kept members informed of Association news. Included in several newsletter issues of the late eighties were publications written by various NARST members titled "Research Matters . . . To the Science Teacher" (Appendix A). This series pertaining to science education focused on topics such as computer use, gender differences, wait-time, cognitive skills, learning styles, science textbooks, concepts, attitudes, student-student interaction, and laboratory lessons. "Research Matters" was the idea of Ann C. Howe and initiated during her term as NARST president (1983-1984). She and William G. Holliday, NARST executive secretary (1981-1985), distributed the first four issues from the NARST booth at the 1984 NSTA meeting in Boston.

In 1991, NARST research coordinator Frances Lawrenz began efforts to compile about 26 of the "Research Matters" into a single NARST

publication. This effort would be the fifth NARST monograph since 1989 (Appendix A). In order of publication, the monograph topics in science education research were the learning cycle, the classroom learning environment, the world view theory, and interpretive research.

As NARST members continue, through publications, meetings, and personal contacts, to pass "torches . . . one to another" and to others, they should heed the message conveyed in Jacobson's address. The Association has a rich history. The light from its past should serve as illumination for those entrusted with its future. Organizing, recording, and reporting part of NARST's first 64 years (1928-1991), was the purpose of this study.

Statement of the Problem

Prior to this study there was no central archive for NARST. Many of the records were destroyed or lost. Records that still existed were scattered among current and former Executive Board members and committee chairpersons. The problem was to collect and organize historical information about NARST and then to construct a written history of the organization. The history begins with events preceding NARST's founding in 1928 and continues through many portions of its first 64 years. Areas of emphasis within the Association's history include: origin, early years, journals, membership, annual meetings, important documents, various publications, leadership, and significant activities.

Rationale for Study

In the introduction to his article, "Historical Research in Science Education," NARST member Rodger W. Bybee asserted that

One of the regrettable lacunae in the literature of science education is historical research. Our journals contain experimental studies, descriptive surveys, standardized tests, clinical assessments, and position statements. Rarely is there a study concerning the history of science education.¹¹

In support of his assertions, Bybee presented statistics obtained by analyzing articles in Science Education, a journal that was NARST's official organ for 33 years, 1929-1961. However, he examined 60 years of the publication, 1916-1976. Of the 3,074 articles published during this time,

only 1.6% (49) were about the history of science education. Another 4.1% (127) articles were short biographies of historically significant science educators. For 20 years (1929-1949) Science Education also included abstracts of science education related articles published in other periodicals. Of 2920 published abstracts less than 1% (16) had to do with science education history.¹²

Bybee also reported that of the 3,200 doctoral studies completed between 1950 and 1976 and listed in Dissertations in Science Education that "only 48--an astounding 1.5%--were historical."¹³

Science education, according to Bybee, has

a long and important history in American education and society, but few realize how long and important because little historical research is reported. The studies that have been reported indicate there are valuable lessons to be learned from the examination and analysis of our past. We can no longer ignore the history of science teaching in America. While we may not be doomed to relive the past, we can certainly improve our present and future development through an increased historical perspective.¹⁴

There is much need for historical research in science education.

Such research

will help define the discipline during this period of questioning and reevaluation. There are numerous areas of investigation that would be beneficial to the science education community. Historical research is not unknown to science educators when one considers that most individuals, if for no reason greater than demonstrating the need for a study, make connections with past ideas, events, persons and institutions. We have spent over two hundred years establishing a discipline called science education. It is now appropriate to spend some time looking at the discipline and how, what, when and where things were established. When were additions made? And why were components established as they were? Historical study will help science educators understand some present problems and prepare for the future with an adequate perspective of the past.¹⁵

Paul H. Joslin, NARST archivist, concurs with the opinions of Bybee expressed in the preceding paragraphs. He also agreed with Bybee's statement that "it is important to understand the histories and contributions of institutions and organizations to science education."¹⁶ According to Joslin, NARST is one such organization whose activities and members have made vital contributions to science education. For this reason, Joslin, in 1981, initiated activities to develop a NARST archive and a recorded history of the Association.

The initiation of this historical-research study commemorated the 1987 Sixtieth Anniversary of NARST. No known attempt had yet been made to do a comprehensive study of NARST's history. Several NARST leaders had expressed to the author the need and interest in having the history of the organization recorded. Some of these members included: Gerald S. Craig, NARST president (1936) and a charter member, now deceased; N. Eldred Bingham, president (1950); George G. Mallinson, president (1954); Willard J. Jacobson, president (1970) and student of Gerald S. Craig; Paul H. Joslin, executive secretary

(1976-1980) and current archivist; and Stanley L. Helgeson, president (1981, 1982) and research coordinator (1972-1977). These individuals wanted a history recorded before more of the primary resources became lost.

A few members from the 1930s and 1940s are still living and able to relate experiences from early years of the organization. For instance, Paul DeHart Hurd was a graduate student during the time before NARST's founding. He participated in seminars led by individuals who became charter members of NARST. From these seminars, he recalled discussions about the need for a science teaching research organization.

Educational research and research organizations such as AERA, are important. However, an organization devoted solely to teaching research in a specific discipline, such as science, appears to be distinctive. In reference to research organizations within the subject area disciplines, Willard J. Jacobson maintained that

NARST is a unique organization; there is probably no other such organization in the world. It is important for us to gain a deeper understanding of how the organization originated, evolved into the organization it is today, and the potentialities it has for the future.¹⁷

He further affirmed

that there are some very important insights to be gained from the study of the history of this unique organization. To a certain extent, it mirrors the development of science education research in the United States. I am confident that we will learn more about science education research as well as the nature of our organization as you complete your study.¹⁸

Science education research, referred to in the quotation from Jacobson's letter, started about 1905. As this kind of research developed, and the number of researchers increased, so did the

importance of sharing, critiquing, assimilating, and disseminating the research. To accomplish these goals, the National Association for Research in Science Teaching was founded. As a result, the Association became an integral part of science education research.

During this century, educational research has gained influence and recognition in the field of education. This influence is a reason why the histories of educational research and educational research organizations are valuable. From these histories, increased understanding of present institutions, practices, and problems may emerge. Records of the past help ensure progress. They provide opportunities to learn from previous discoveries, successes, and mistakes. Identification of needs and plans for future actions should be guided by records of the past. Only through history can a broader, more appreciative view of a subject be obtained.

Review of Literature

The search for relevant information sources included personal libraries and files of NARST members; the card catalogs of Drake University in Des Moines, Iowa, and Teachers College, Columbia University in New York City; several indexes and abstracts; computer searches; interlibrary loans; bibliographic references appearing in pertinent articles; and recommendations of knowledgeable individuals. Beside each purpose listed below, and enclosed in parentheses, is a summary of the sources used:

1. Obtaining information about NARST (NARST communications, documents, newsletters, minutes, committee reports, programs, and publications such as Science Education and JRST; publications having

NARST affiliations or cooperation such as the ERIC Science Education Information Reports).

2. Reviewing the general history of science teaching research (NARST publications and affiliate publications as listed in the preceding purpose; reviews and summaries of research in science education beginning with the three--1926, 1931, and 1939--Investigations in the Teaching of Science by Francis D. Curtis; the Thirty-first, Forty-sixth, and Fifty-ninth Yearbooks of the National Society for the Study of Education; and selected references from Voelker and Wall, "Research and Development in Science Education: A Bibliographic History," 1973.

3. Learning about the historical method (Borg and Gall, 1983; Bybee, 1982).

4. Examining formats used to write histories of other organizations (commemorative articles appearing in journals, and dissertation studies that recorded the histories of education-related organizations).

5. Acquiring knowledge involved in establishing, organizing, and using an archive (library book references).

Methodology

The historical method was employed in this research study. Historical sources were evaluated using both external and internal criticism. External criticism is evaluation of the nature of the source. Internal criticism is evaluation of the information contained in the source.

To fulfill purposes two through five in the preceding literature review section, secondary and tertiary sources were examined. This background information was beneficial in developing initial research questions and in planning procedures necessary to accomplish this study.

While the review of secondary and tertiary sources was underway, the acquisition of primary sources began. Many of these primary sources were scattered among present and past officials of NARST. They included: correspondence, various reports and records, meeting minutes, copies of programs, Association publications, pictures, and other historically significant materials originating from the Association's official work. These documents and other primary resources were located and accessed using the following procedures:

1. Special questionnaires and material requests were developed and mailed to each of the following groups of individuals: past presidents, executive secretaries, former journal and newsletter editors, long-term active members, and other known key resource people. Paul H. Joslin, a past executive secretary of NARST, helped identify and locate the NARST members to whom the initial and subsequent information requests were sent.

2. The December 1986 and the September 1987 NARST newsletters contained requests for information and materials pertinent to the historical study or the establishing of a NARST archive.

3. Personal interviews of present and past members of NARST provided a valuable primary source. Most persons were interviewed at conventions or during specially-arranged interview trips. With

permission, several of these interviews were taped. Other individuals were contacted by telephone. To the extent possible questions were personalized and specific. Information was sought about NARST activities, experiences, perceptions, and impact. The persons interviewed included present and past NARST officials, student members, foreign members, members who have not served in official capacities, and non-member leaders from groups affiliated with NARST, including NSTA and the Association for the Education of Teachers in Science (AETS).

4. Through interviews, correspondence, and questionnaires, recommendations of persons to contact for information and materials were requested. By using past membership records, prior institutions of employment, and known colleagues, attempts were made to locate these individuals. Additionally, resource persons identified through research reading were sought. The preceding described efforts helped alleviate overlooking a valuable contact who was no longer a member, may not have responded, or did not know of the information search.

Arrangements were made for NARST historical and archival materials to be sent to Paul H. Joslin at Drake University. As materials and data were collected, they were filed. Programs, journals, newsletters, and other publications were sorted, arranged chronologically, and boxed separately from other documents. The major headings for filing records such as correspondence include the names of the NARST presidents and the dates of their term(s) of office. Other major headings pertain to membership directories, financial reports, minutes, journal information, and important documents.

Subheadings designate type of document being filed behind each major heading. Materials within each file folder are arranged chronologically. Notes pertinent to the study were systematically taken from the materials in these files.

Mode of Presentation

This historical study of NARST's first 64 years has been compiled with the intent of summary monographs of NARST's history being written for subsequent publication and distribution. One monograph would probably focus on the organization, its membership, and its annual meetings. The other would chronicle the history of NARST's official journals, Science Education and Journal of Research in Science Teaching.

This dissertation consists of two volumes, which combined include an introduction, nine additional chapters, and several appendixes. The chapters consist of relevant chronologic and thematic segments of NARST's history. For instance, Chapter IX, "NARST Annual Meetings," contains headings such as "Impressions of First NARST Meeting," "Meeting Locations and Dates," "Planning," "Program Structure," and "Program Content." Appendixes that appear at the end of the monograph include: important correspondence, NARST documents (constitutions, bylaws, and articles of incorporation, first publication agreement), journal information, awards and award recipients, NARST officers, committee lists, membership data and summarizations, meeting and program analyses, and information on various non-journal publications.

Because of their contributions or influential role in the information gathering process for this study, the following past

presidents--Willard J. Jacobson, Herbert A. Smith, and Clarence H. Boeck--reviewed most of the first draft of this paper. Their comments were taken into consideration before the final draft was written. The NARST archivist, Paul H. Joslin, reviewed both first and final drafts of the NARST history.

Other NARST members frequently consulted included George G. Mallinson, Jaqueline Buck Mallinson, Robert E. Yager, Milton O. Pella, William G. Holliday, Glenn Markle, and Patricia E. Blosser. The information provided by these individuals was invaluable.

NOTES

¹NARST, Minutes of the First Annual Meeting, 27 and 29 February 1928, Science Education 13 (May 1929): 277.

²George G. Mallinson, "A Matter of Pride," NARST Newsletter 1 (October 1953): 1.

³NARST, Membership brochure [early 1980s], NARST Archives.

⁴Ibid.

⁵Willard J. Jacobson, "The First Meeting of the National Association for Research in Science Teaching," luncheon address presented at Golden Anniversary of NARST, Cincinnati, Ohio, 23 March 1977, p. 1, NARST Archives.

⁶NARST, "Directory of Members 1990-91," NARST Archives.

⁷NARST, Membership Brochure.

⁸Ibid.

⁹Ibid.

¹⁰NARST, Membership Brochure.

¹¹Rodger W. Bybee, "Historical Research in Science Education," Journal of Research in Science Teaching 19 (January 1982): 1.

¹²Ibid.

¹³Ibid.

¹⁴Ibid.

¹⁵Ibid., 10.

¹⁶Ibid.

¹⁷Willard J. Jacobson, letter to Paul H. Joslin and author, 22 April 1985.

¹⁸Ibid.

Chapter II
ORIGIN OF THE NATIONAL ASSOCIATION FOR
FOR RESEARCH IN SCIENCE TEACHING

The Stage Was Set

The 1920s were progressive years in science teaching research. More and more individuals in education, teacher preparation, and the science disciplines focused attention on the field. Research in science teaching and publication of the research expanded. Centers of interest in science education strengthened and increased in number, particularly within the midwestern and northeastern states. In 1926, Francis D. Curtis published the first of three Digests of Investigations in the Teaching of Science. In the Foreword to the 1971 reprints of these Digests, Willard J. Jacobson acknowledged that "[f]or some time, the 'Curtis Digests' have been known as the best guide to science education research for the periods that were surveyed."¹ For this reason, the first two Curtis Digests were examined to help clarify and confirm what was occurring in science education during the first 30 years of the 1900s.

The 1926 Digest contained 70 studies. Curtis had searched the pedagogical literature of the previous 20 years for learning and curriculum research studies in science that were supported by objective data.² Of the 70 investigations meeting the criteria: 44 were curricular studies (8 dealt with elementary school science), and 26 were learning studies (2 dealt with elementary school science). Only 14 of these investigations existed prior to the 1920s. The

earliest curricular study was a 1904 report entitled "Children's Interests in Nature Materials" (elementary science) and the earliest learning study was a 1910 experiment in the teaching of biology (secondary science). The 56 remaining studies were completed in 1920-1924. Thus, from just the first 5 years of the 1920s, Curtis was able to select four times the number of studies fulfilling his criteria than from the 15 previous years.

Of the 70 studies comprising the first Digest, the origins of 58 were able to be determined from the provided information. These origins were found to include 24 different institutions or organizations. Fifty percent of the studies originated in northeastern states; 43% in midwestern states; and 7% in southern states.

The accolades and inquiries received by Curtis after publication of the first Digest demonstrated, "that a later similar volume would be welcomed."³ The second volume, covering the years 1925-1930, was published in 1931. In the preface to the Second Digest Curtis wrote that it had become

evident that the scope of a second volume should be expanded not only to include other types of investigations besides learning and curricular studies, but also to represent the college field as well as the elementary and secondary fields.

The problem of selection of content became an extremely perplexing one: Literally hundreds of studies covering the various phases of the teaching of science had been published in the six years following the period represented by Volume I; moreover, unpublished studies, perhaps even more numerous, were available in various centers.⁴

Curtis, with the help of about 40 science education researchers and leaders, selected 92 studies for summarization and 157 for supplementary listing in the Second Digest. The number of studies

summarized and listed in the Second Digest, the quote about selection problems for these studies, and an origin analysis of summarized investigations in the first two Digests, help substantiate the continued growth experienced in science education research throughout the 1920s.

Of the 256 investigations included in Curtis' Second Digest: 21 were elementary science, 205 were secondary science, and 30 were college science. These investigations, as indicated previously, were not divided into learning and curricular studies, as those in Volume I had been, but instead by education levels. The secondary level, however, was further subdivided into subject areas.

The 92 research studies summarized in Curtis' Second Digest were scanned to determine their origins. Eighty-six origins were established through information provided. The 33 institutions identified represented an increase of more than 37% over the first Digest. Most of this growth resulted from an increase in midwestern centers, addition of western states, and inclusion of a foreign country. The actual geographical breakdown of the origins was as follows: 34% from northeastern states; 52% from midwestern states; 8% from western states; 3% from southern states; and one study from South Africa.

Curtis continued his Digests, and his Third Digest of Investigations in the Teaching of Science covered the period 1931-1937 with digests of 93 research investigations. These digests continued to be of great value to investigators in the teaching of science. Later, the digesting of science education research was carried out by

such agencies as ERIC that had more resources to undertake the task. However, there was a period 1938-1957, for which there were no digests of science education research. Frederick L. Fitzpatrick and Willard J. Jacobson planned and edited a three-volume series of Digests that extended the Curtis Digests and made the research reported between 1938 and 1957 more accessible to researchers.⁵

The growth experienced in science education research, as well as the stimuli provided by the Curtis Digests, prompted university and college staff to develop study units, courses, and seminars devoted to the topic. Paul DeHart Hurd, a student at State Teachers College in Greeley, Colorado, during the late 1920s and early 1930s, recalled attending such seminars. Frank C. Jean, an interested biology professor at Greeley, and S. Ralph Powers, a science education researcher at Teachers College, Columbia University, designed some seminars for discussing "research in science education as a professional field."⁶

Each summer a leader in science education was invited for a series of lectures in the seminars such as Beauchamp of Chicago, and recent doctoral students in science education from various universities. It should be noted that up to this time most of the research in science education was done as a requirement for a master's degree.⁷

Other leaders invited to participate included Palmer O. Johnson of the University of Minnesota and Victor H. Noll of Teachers College, Columbia University. Hurd further recalled that 8 to 12 people normally attended the seminars. In his recollections, Hurd wrote that the Curtis Digests were frequently discussed or cited at the seminars.

He further noted that the work of Francis D. Curtis had

led to the observation that there should be some well-formulated criteria for defining research and for its synthesis. Curtis set up statistical criteria for research that reflected the "scientific movement" in education during the 1920s.⁸

The Time Was Right

When science educators gathered at Greeley and elsewhere to discuss the Curtis work, review current science education research, or attend education meetings, their concerns would surface. Hurd related that these concerns included: improvement of research critique methods, characteristics of quality research, the importance of publishing studies, the advisability of an organization of science teachers, "the need for a professional organization for research in science teaching, and a journal dedicated to this end."⁹

Further evidence of these shared concerns was found in an article entitled "Fifteen Years of the National Association for Research in Science Teaching."¹⁰ In this article W. L. Eikenberry stated that a special committee of the Central Association of Science and Mathematics Teachers (CASMT) was appointed in 1926. The committee was chaired by CASMT President Frank E. Goodell, a science teacher from Iowa.¹¹ The committee's charge was to explore the advisability of promoting the organization of a national council of science teachers. Many prominent science educators such as S. Ralph Powers, who helped organize the Greeley seminars, were deeply interested in the outcome of this committee's work. In November of 1927 at the Detroit meeting of the Central Association, the committee and their chairman, Frank E. Goodell, recommended that a national council be formed. "Greatly to

the disappointment of Dr. Powers, Goodell and many others, the Association [CASMT] refused to act in the matter."¹²

Eikenberry further remembered that after adjournment of the meeting, the needed science teaching organization was the subject of conversation in the corridors of the headquarters hotel.

I particularly recall a group consisting of Roecker, Obourn, Glenn, myself and possibly one or two others expressing our mutual disappointment and insisting that "something ought to be done." In the course of the conversation, I suggested that something would be done only if some one person took matters into his hands and called together an interested group . . . at the coming meeting of the Department of Superintendence [of the National Education Association (NEA)] in Boston."¹³

With the approval of these colleagues, W. L. Eikenberry returned to East Stroudsburg Teachers College in Pennsylvania, and immediately proceeded with his suggested plan of action. In letters to S. Ralph Powers, Frank E. Goodell, and Hanor A. Webb, President of the Department of Science Instruction, Eikenberry outlined his ideas and asked approval. He also wrote N. Henry Black of Harvard University for his opinion of the venture and for suggestions of a Boston or Cambridge meeting site. Favorable replies were returned from each of these individuals. In addition, Eikenberry learned that Powers had already written Goodell expressing the hope that a representative group be brought together in Boston. With the encouragement of these contacts, Eikenberry prepared the following letter mailed on January 24, 1928.

At an informal discussion in the hotel corridor after the close of the Detroit meeting of the C.A.S.M.T. a great deal of concern was expressed with reference to the fact that there is not and has not been any national organization which stands distinctively for the professional attitude in science education, or speaks authoritatively for the field of education in science.

All agreed that the need for such leadership and opportunity for expression is most pressing.

It was proposed, in view of the situation mentioned above, to take advantage of the opportunity offered by the next meeting of the Department of Superintendence in Boston to bring about a meeting of a limited number of the science teachers of the country. It would be the intention to ask this meeting to discuss the reorganization of the Department of Science Instruction, the proposed formation of a National Council, or any other proposals that may be brought forward. Since the close of the meeting in Detroit, Dr. S. R. Powers, Vice-Chairman of the Committee on the National Council, has made a similar proposal for a meeting in Boston.

The proposal for a conference at Boston, or vicinity, has the approval of Mr. Roecker, President of the Central Association of Science and Mathematics Teachers; Mr. Goodell, Chairman of the Committee on the National Council of Science Teachers; and Dr. H. A. Webb, President of the Department of Science Instruction, N.E.A., as well as that of numerous other representative science teachers who have been consulted. Professor Black, of Harvard, has consented to secure a meeting place whether in Boston or Cambridge and to make necessary local arrangements.

You are invited to be a member of this informal conference. If you will notify the writer, at your earliest convenience, of your interest and probable attendance, notice will later be sent to you regarding the exact time and place of meeting.¹⁴

Eikenberry sent this letter to about 35 individuals he felt were prominent in the science-teaching field.

I tried to include persons who were training science teachers in colleges and universities, supervisors of science in large city school systems, and those who had become well known through activity in national organizations, but not many were included whose place of residence was so remote from Boston that attendance was improbable. Replies were received from at least twenty-six persons, all of whom expressed sympathy with the movement, though not all expected to be able to be at the meeting. Possibly other replies were received, but my file contains letters from the following:

Baer	Glenn	Persing
Beauchamp	Goodell	Pieper
Black	Jean	Powers
Brownell	Lunt	Roecker
Carpenter	Mathewson	Thiele
Craig	Meister	VanCleve
Curtis	Obourn	Watkins
Davis	Palmer	Webb
Whitman		Wildman ¹⁵

As stated in Eikenberry's letter to these individuals, N. Henry Black made the arrangements for a meeting site. He invited the group to be guests of the Harvard School of Education at the Colonial Club in Cambridge. Final notices were sent announcing a meeting to be held at this location on Monday evening, February 27, 1928.¹⁶

The First Meeting: The Casting
February 27, 29, 1928, in Cambridge, Massachusetts¹⁷
Chairman, W. L. Eikenberry

Including Eikenberry, 17 interested educators were able to attend this first organizational meeting.¹⁸ Their initial order of business was to elect a chairman. Eikenberry, who had called the meeting to order and stated its purpose, was unanimously voted to continue as chair.

Nine motions were proposed and passed that Monday evening, February 27, 1928. The first motion appointed S. Ralph Powers of Teachers College, Columbia University, as secretary. The second motion established an Executive Committee for furthering the organization. This committee included the chairman, secretary, and designated members, the number of which was yet to be determined. In the third motion, the first designated member was elected. Elliot R. Downing from the University of Chicago would fill the third position on the Executive Committee. As participants further discussed the Executive Committee, they decided that supervisors in the public school system should be represented. This became the fourth motion. In fulfillment of this goal, Harry A. Carpenter from the Department of Public Instruction, Rochester, New York, was elected.

The next topics of discussion dealt with membership and future meetings. The fifth motion included both. Membership would be granted to those interested in the supervision of science or the training of science teachers and to others elected by the association. Future meetings would continue to be held in conjunction with the Department of Superintendence of the National Education Association. As for charter membership, the sixth motion stated that persons present at this organizational meeting, and those invited, would constitute the charter members. To promote the work of the Executive Committee, the seventh motion requested \$1.50 of each participant. The eighth motion scheduled a continuation meeting for Wednesday at 12:30 p.m. The final motion extended appreciation to the Harvard School of Education for use of their rooms, and for dinner, and to N. Henry Black for making the local arrangements.

Since 1928 was a leap year, the date of the Wednesday meeting was February 29. Eleven people were in attendance when the meeting was called to order at 12:20 p.m. On this day 10 motions were proposed and passed unanimously. Two of these motions rescinded motions from Monday evening. The first change was on the question of charter membership. Hanor A. Webb records this change in his NARST Silver Anniversary Address:

An argument ensued that now causes a smile. . . . [S]ome sprite of malice entered into the discussion, and it was narrowly voted that only those present--the sixteen--should be charter members. In 1930, however a more generous spirit prevailed, it was voted that all who had responded favorably to the invitation, had been elected at the Cambridge meeting, and had paid their dues, should be considered Charter Members.¹⁹

The question of whether dues should be \$1.50 or \$2.00 evidently had not been completely settled at the Monday meeting. According to Webb the four members of the Executive Committee were instructed to settle the matter and report at the Wednesday session.²⁰ However, the Executive Committee reported a tie. Webb related "Francis D. Curtis was elected the fifth member of the Executive Committee--so the story goes--to break a tie vote."²¹ "He [Curtis] voted for the \$2.00 amount. Those who had paid dues the day before handed an additional \$.50 to the treasurer--cheerfully, we hope."²² As for treasurer, the group decided that the secretary would also act as treasurer.

The fifth member elected to the Executive Committee, Francis D. Curtis, was to serve as curator. His job was to assemble science teaching research studies and direct the work of abstracting and digesting these studies. Curtis' duties would cooperatively continue the work he had begun with the publication of his first Digest.

Among the other seven motions was one to establish of the organization's purpose. This purpose would be "to promote scientific study of problems of science teaching and to disseminate the results of such study."²³

Five of the remaining motions dealt with the Executive Committee. Other functions assigned to the Executive Committee included: investigating names of potential members for recommendation at the next meeting, locating schools in which research is being conducted and reporting at the next meeting problems under investigation, assembling the titles of unpublished theses, and constructing a list of the problems which seem to need immediate study.

The final motion of the day was the naming of the newly-founded organization. Proposed and accepted was "National Association for Research in Science Teaching."²⁴

Interlude

After the Cambridge meeting, the new Executive Committee drafted a summary letter of the founding meeting. Their letter could be construed as the first membership letter and official communication pursuing the goals for which NARST had been organized. For this reason the whole letter as reported in Volume 31 of Science Education is included as Appendix B. The following is the first paragraph of that communication.

Most of those who were invited to the meeting of Science Teachers at Cambridge, and were unable to attend, have expressed their interest in the movement and desire to be informed regarding its progress. This circular letter is sent out to all of those who were originally invited in order that they may have this information.²⁵

The Executive Committee and other charter members continued their communications and planning. They used the interlude between the 1928 founding meeting and the first programmed meeting in 1929 as a time of development. Eikenberry related that the members of the association felt

the first year must be a period in which the fundamental characteristics of the institution were growing out of the needs of the situation as they became obvious. In order to allow free opportunity for such internal development, no new members were invited to join, no constitution was adopted, and no publicity was sought.²⁶

One such need that became obvious is described using Eikenberry's words.

During the past year it became clear that the organization would have to face the problem of providing an avenue of publication in the very near future. The president therefore took upon himself the responsibility of appointing a Committee on Publication, to which was assigned the task of investigating the possibilities that were in sight and reporting to the Cleveland meeting.²⁷

The Cleveland meeting was to be the first meeting with a planned program. Eikenberry stated that "[i]n line with the policy of gradual growth, but one session for the reading of research papers was provided . . . [However] enough papers were offered to have filled a program of two sessions."²⁸

The following is a description of this Cleveland meeting. An interesting historical note to consider as one reads about the Second Annual Meeting is that 1929 was the year of the stock market crash. The Roaring Twenties had ended. The country was entering the years of the Great Depression.

The Second Annual Meeting: The Debut
February 25, 1929, in Cleveland, Ohio²⁹
President, W. L. Eikenberry

At this Cleveland meeting, Eikenberry's official title was president, instead of chairman, as it had been at the first meeting. Thus, the Second Annual Meeting was called to order on February 25, 1929, at 2:00 p.m., in the Hotel Cleveland by the first NARST president, William Lewis Eikenberry.

At the time of this meeting, NARST membership stood at 33. Their president contended that

[t]he membership of the Association is not at present large but all members are in the true sense active members. New members

will be secured by invitation and election by the society. It is not the intention to add to the membership list very rapidly during the formative period.³⁰

This Cleveland meeting, as had been the Cambridge meeting, was scheduled during the annual meeting of the NEA Department of Superintendence. Eikenberry indicated that "[a]lthough the meeting was not announced upon the official program, the attendance was much larger than expected."³¹ The secretary recorded that 60 people, "representing a wide geographical area,"³² attended this first open meeting. Judging from voting records of the evening business meeting, the number of NARST members among these 60 people approximated 22.

To date, a reference of Eikenberry's opening remarks at this first meeting has not been found. Since two-thirds of those present were not NARST members, he presumably chose to introduce the newly-founded organization. His words were probably similar to these taken from the public announcement of NARST he wrote for the first edition of Science Education.

For a number of years it has been clear that real progress in science teaching must rest upon the same foundation as progress in science itself--that is, upon facts developed by fundamental research. There has also been correspondingly a growth of interest in the research related to the problems of science teaching. This is shown by the growing attention to education which is manifest in the activities of such organizations as the American Association for the Advancement of Science and the American Chemical Society, the increasing number of persons who are making education in science their major interest, and the publication of research papers of high standard. The development of research in this field has suffered from three handicaps. There has been no national organization which represented the interests of investigators in the field of science teaching, no meeting of national scope where papers could be read with the assurance of meeting both appreciation and critical evaluation, and no appropriate journal for the publication of such researches. The National Association for Research in Science Teaching was organized to meet these needs. It resulted from a

meeting held at Cambridge, Massachusetts, a little more than a year ago. . . .

Since the Association is now before the public . . . , a statement to the public is in place. To those who are not members of the Association we desire to express the desire of the organization to cooperate with every existing agency looking toward the advancement and improvement of instruction in science in all grades of schools. Everyone is welcome and invited to the program meetings of the Association. Particularly are we anxious to secure attendance of teachers and supervisors of science, and school administrative officers. These meetings will ordinarily be held at the time and place of the meetings of the Department of Superintendence.³³

The three-hour program presented after Eikenberry's opening remarks included a brief summary of the report by the Assistant Superintendent of the New York City Public Schools entitled, "Teaching Science as a Way of Life" and the seven NARST papers listed below:

1. "The Determination of Important Principles of Science to be Included in the Curriculum," Elliot R. Downing, University of Chicago
2. "Inventory of Certain Aspects of Learning in Physics," Earl R. Glenn, New Jersey State Teachers College, Montclair
3. "Science Equipment in Missouri High Schools," Ralph K. Watkins, University of Missouri, Columbia
4. "The Achievement of Students in High School and University Physics," A. W. Hurd, University of Minnesota
5. "A Synthesis and Evaluation of Subject Matter Material in General Science," Francis D. Curtis, University of Michigan, Ann Arbor
6. "A Study of the Activities of Science Teachers," Harry A. Cunningham, Kent State Normal College, Kent, Ohio
7. "Present Specific Objectives in Junior High School Science as Revealed by Selected Investigations, Courses of Study and Textbooks," Ellis C. Persing, Cleveland School of Education³⁴

S. Ralph Powers describes these presentations as reflecting "the spirit of the Organization in that each of them was a report of significant research relating to problems of science teaching."³⁵

In addition to the oral presentations, mimeographed sheets were distributed reporting research in progress by Association members or under their direction. The 10 members reporting such research were:

Harry A. Carpenter, Department of Public Instruction, Rochester, New York; Jean O. Frank, State Teachers College, Oshkosh, Wisconsin; Morris M. Meister, New York Training School for Teachers, New York City; E. Laurence Palmer, Cornell University, Ithaca, New York; Frank A. Reidell, Kansas State Teachers College, Pittsburg, Kansas; Ralph K. Watkins, University of Missouri, Columbia, Missouri; Hanor A. Webb, George Peabody College for Teachers, Nashville; S. Ralph Powers, Teachers College, Columbia University, New York City; Earl R. Glenn, State Teachers College, Montclair, New Jersey; John A. Hollinger, Department of Public Instruction, Pittsburgh, Pennsylvania.³⁶

After the programmed meeting, a dinner business meeting was held at the Cleveland Museum of Art.³⁷ The members of NARST were the guests of the Cleveland School of Education. The main topics of business that evening were the qualifications for membership and the report of the Committee on Publications. The group decided that to be proposed for membership, an individual must have acceptable research published. Other qualifications were to be formulated by the Executive Committee.

The Committee on Publications submitted several recommendations to the membership. One of these recommendations was that the Association accept the offer by the owner of General Science Quarterly, Walter G. Whitman, and take over the publication of the Quarterly. The new title suggested for this publication was The Journal of Science Education.³⁸ Following the report of the Publications Committee, a motion passed to accept Whitman's offer.

Thus the Quarterly, soon to be known as Science Education, became the first official publication of NARST.

Powers lists 33 members as of February 25, 1929 (Table 1). However, he reports that 31 members had paid their dues for the first year and that the treasury total was \$62.00. The members present voted to maintain the current Executive Committee for another year.

After the business meeting, the group discussed the topic, "Problems of Supervision in Science in City and State Systems."³⁹

Discussion leaders were:

Harry A. Carpenter, City Schools, Rochester, New York
Edward E. Wildman, City Schools, Philadelphia, Pennsylvania
Gerald S. Craig, Horace Mann School, Teachers College,
New York, N. Y.

This activity concluded the first year and the second meeting of the National Association for Research in Science Teaching.

Table 1

Association Members on February 25, 1929

Persons considered to be charter members in 1929 ^a	Persons added to charter membership by a 1930 amendment
C. E. Baer State Dept. of Education Albany, New York (343 State Street Rochester, New York) ^b	Wilbur Beauchamp School of Education University of Chicago Chicago, Illinois
N. H. Black Jefferson Laboratory Harvard University Cambridge, Massachusetts	Herbert Brownell University of Nebraska Lincoln, Nebraska
Harry A. Carpenter Dept. of Public Instruction Rochester, New York	Otis W. Caldwell Teachers College New York City, New York
Gerald S. Craig Horace Mann School New York City, New York	H. A. Cunningham State Normal School Kent, Ohio
Francis D. Curtis University High School University of Michigan Ann Arbor, Michigan	C. W. Finley (W. Charles Finley) State Teachers College Montclair, New Jersey
E. R. Downing School of Education University of Chicago Chicago, Illinois	J. O. Frank State Teachers College Oshkosh, Wisconsin
W. L. Eikenberry State Teachers College East Stroudsburg, Pennsylvania	A. W. Hurd ^c University of Minnesota College of Education Minneapolis, Minnesota

Table 1 (continued)

Persons considered to be charter members in 1929 ^a	Persons added to charter membership by a 1930 amendment
Earl R. Glenn State Teachers College Montclair, New Jersey	T. C. Jean State Teachers College Greeley, Colorado
John Hollinger Dept. of Public Instruction Pittsburgh, Pennsylvania	Joseph R. Lunt Boston Teachers College Boston, Massachusetts
Homer W. LeSourd Milton Academy Milton, Massachusetts	Ellsworth O. Oburn (Ellsworth S. Obourn) John Burroughs School St. Louis, Missouri
Morris Meister New York Training School for Teachers 135th St. and Convent Ave. New York City, New York	E. Laurence Palmer Cornell University Ithaca, New York
Ellis Persing Cleveland School of Education Cleveland, Ohio	W. F. Roecker Boys' Technical High School Milwaukee, Wisconsin
Charles J. Pieper New York University Washington Square New York City, New York	C. L. Thiele Supervisor of Science Board of Education Detroit, Michigan
S. R. Powers Teachers College Columbia University New York City, New York	Morris Van Cleve Supervisor, Nature Study Board of Education Toledo, Ohio
F. A. Riedel Kansas State Teachers College Pittsburg, Kansas	Ralph Watkins University of Missouri Columbia, Missouri

Table 1 (continued)

Persons considered to be charter members in 1929 ^a	Persons added to charter membership by a 1930 amendment
W. G. Whitman State Normal School Salem, Massachusetts	H. A. Webb George Peabody College for Teachers Nashville, Tennessee
	E. E. Wildman Office of the City Super- intendent of Schools Philadelphia, Pennsylvania

^aThese individuals attended the founding meeting held in Cambridge. There are only 16 members' names included in this column. However, in more than one reference the figure of 17 was given for the attendance at the first meeting. Why the 17th person did not become a charter member has not been found. Perhaps one of the references is in error.

^bParentheses surround name corrections and address changes that appeared in the 1930 listing of members.

^cA. W. Hurd is the only member to have joined in 1929. All other members joined in 1928. Some references included Hurd as a charter member; some did not.

Source: NARST, Minutes of the Second Annual Meeting, 25 February 1929, Science Education 13 (May 1929): 279-85.

NOTES

¹Francis D. Curtis, A Digest of Investigations in the Teaching of Science in the Elementary and Secondary Schools, with Foreword by Willard J. Jacobson (Blakiston Division, McGraw-Hill Book Company, 1926; reprint, New York: Teachers College Press, Columbia University, 1971), v (page reference is to reprint edition).

²Ibid., vii.

³Francis D. Curtis, Second Digest of Investigations in the Teaching of Science (Blakiston Division, McGraw-Hill Book Co., 1931; reprint, New York: Teachers College, Columbia University, 1971), vii (page reference is to reprint edition).

⁴Ibid.

⁵The three volumes that covered the period 1938-1957 were: Robert W. Boenig, Research in Science Education, 1938-1947 (New York: Teachers College Press, 1969); J. Nathan Swift, Research in Science Education 1948-1952 (New York: Teachers College Press, 1969); Elizabeth Phelan Lawlor, Research in Science Education, 1953-1957 (New York: Teachers College Press, 1970).

⁶Paul DeHart Hurd, letter to Paul H. Joslin and author, 19 July 1988, NARST Archives.

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰W. L. Eikenberry and Ellsworth S. Obourn, "Fifteen Years of the National Association for Research in Science Teaching," Science Education, approval S. R. Powers, 31 (October 1947): 250.

¹¹Dean C. Strand, Herbert A. Smith, and Glen W. Warner, "Frank E. Goodell 1867-1946," School Science and Mathematics 50 (March 1950): 180.

¹²Eikenberry and Obourn, "Fifteen Years," 250.

¹³Ibid.

¹⁴Ibid., 250-51.

¹⁵Ibid., 251.

¹⁶NARST, Minutes First Annual Meeting (1928).

¹⁷Eikenberry and Oburn, "Fifteen Years," 251.

¹⁸Eikenberry and Obourn, "Fifteen Years," 251.

¹⁹Hanor A. Webb, "The Growth and Activities of the National Association for Research in Science Teaching," Science Education 37 (February 1953): 11-17.

²⁰Hanor A. Webb, "Famous Firsts of NARST," Journal of Research in Science Teaching 1 (1963): 15.

²¹Webb, "Growth and Activities," 13.

²²Webb, "Famous Firsts," 15.

²³NARST, Minutes First Annual Meeting (1928), 277.

²⁴Ibid.

²⁵Eikenberry and Obourn, "Fifteen Years," 251.

²⁶W. L. Eikenberry, "The National Association for Research in Science Teaching" (NARST), Science Education 13 (May 1929): 198.

²⁷Ibid.

²⁸Ibid., 197.

²⁹NARST, Minutes of the Second Annual Meeting, 25 February 1929, Science Education 13 (May 1929): 279-85.

³⁰Eikenberry, "NARST," 198.

³¹Ibid., 197.

³²NARST, Minutes Second Annual Meeting (1929), 279.

³³Eikenberry, "NARST," 197.

³⁴NARST, Minutes Second Annual Meeting (1929), 279.

³⁵Ibid.

³⁶Ibid., 280-81.

³⁷Ibid., 281.

³⁸Ibid., 284.

³⁹NARST, Minutes First Annual Meeting (1928), 277-78.

Chapter III

EARLY DEVELOPMENT OF NARST

After NARST's second meeting, the Cleveland meeting, President Eikenberry prepared a statement for the first issue of Science Education. This statement included the introduction of NARST and the public announcement quoted in Chapter II. Eikenberry also informed the readers that "[t]he journal of the Association will be open for the publication of research by both members and non-members, within the limits which the size of the magazine allows."¹

In his journal statement, the NARST president not only addressed the public but also spoke to the membership. He suggested

that there are three major activities which ought receive our attention during the year. The first, of course is the promotion of research. We expect to hold two program sessions for the presentation of research papers at our next meeting. The second activity should be the promotion of our journal. The Committee on Publication, now continued in charge of Science Education, has suggested in a letter to all members what should be done to promote the publication. Let us give them the support they so richly deserve. And thirdly, it is believed that the time has now come to give the organization a more definite form by preparing a constitution for consideration at the next business meeting. A committee will shortly be appointed for that purpose. In the meantime, send any suggestions for the constitution to the writer and they will be put in the hands of the committee.²

As promised by Eikenberry, a constitution was ready for presentation at the Third Annual Business Meeting (1930). The Third Annual Meeting and subsequent early meetings through 1942 are summarized in this chapter. However, as the summaries of these meetings are read, one must remember they were not as insipid as the recording of events might make them appear. Charter member Ellsworth

S. Obourn in describing these early meetings attested that "[t]o say that the NARST meetings and discussions were eloquent in those days is correct. To say that they were warm, is an understatement. In fact, at times they were torrid and almost at the point of melting"³ "for there were contrapoints of view and contra interests."⁴

Third Annual Meeting: Constitution and Bylaws
February 24-25, 1930, in Atlantic City⁵
President, W. L. Eikenberry

Eikenberry called the first morning session in NARST's history to order at 9:30 Monday, February 24, in the Valencia Room of the Ritz-Carlton Hotel. This two-day programmed meeting was the Third Annual Meeting over which Eikenberry had presided.

Some important firsts occurred at this meeting. The first presentation by a female was given by the first female NARST member, Florence G. Billig, Supervisor of Science, Sacramento, California. Her paper, the opening paper for the program, was titled "A Technique for Developing Content for a Professional Course in Science for Teachers in Elementary Schools."⁶

Seven additional papers were presented that day and seven more the following day.⁷ Topics ranged from elementary science to college level programs. A paper title that seemed especially appropriate for presentation at NARST was S. Ralph Powers' "A Program of Research in Science Teaching, with Reports of Accomplishments and Work in Progress." The paper that possibly produced the most curiosity about its content was "Superstitions of the Fox River Valley, Wisconsin," presented by J. O. Frank, Professor of Science Education, Wisconsin State Teachers College.

Each of two prominent topics, general science and testing, were discussed in four papers. The proportion of general science papers was indicative of the general science movement occurring in science education. Promotion of this general science movement was the reason for the founding of General Science Quarterly, the predecessor of NARST's journal Science Education.

During the Monday evening business meeting, the members held a general discussion of work in the field. Suggestions for question topics had been obtained from an inquiry sent to the membership by the secretary. So that readers can compare concerns of these early science education researchers with contemporary science education concerns, the questions formulated from members' responses are listed here:

1. What constitutes a satisfactory program of required elective courses for the training of high school teachers in science?
2. Is the elective system of courses in science accomplishing what it should in the way of educating children in this field?
3. What should be the specific objectives of science teaching in the elementary school?
4. What recommendations may be made for improving the methods used by colleges for certifying high school science courses?
5. What objectives should guide in the planning of a correlated sequence of science in elementary and secondary schools?
6. Are existing science tests adequate for the purposes for which they were prepared?
7. Is laboratory work rated equitably in determining the teacher's load?
8. Is there a field in the state teachers college for the so-called survey course?
9. What should constitute the laboratory instruction in general science?
10. Is there need for a closer correlation of the work in science in the secondary schools with the other subjects that are offered?
11. What should constitute the program of teacher training for junior high school teachers of science?⁸

Noticing what changes, stays the same, or repeats itself is an interesting facet of historical study. Certainly most of the preceding concerns are still relevant today. However, skimming over lists of program presenters and Association members, reminds one of a few changes that have occurred in science education. The percentage of females, especially above the elementary school level, involved in NARST and science education as a whole, has significantly increased. State normal schools and teachers colleges have been renamed and greatly expanded in their offerings. Charter member E. Laurence Palmer, originator of the science publications, Cornell Rural School Leaflets, was listed as Professor of Rural Education. In a letter referring to Palmer's position and publication, NARST member Verne N. Rockcastle, Professor Emeritus of Cornell University, wrote that "'Eph' Palmer . . . was essentially a professor of nature-study, and in the 20's and 30's gave much of his attention to the teaching of nature-study in rural schools."⁹ However, nature study gave way to elementary science and general science. In addition, Rockcastle explained that

with the inexorable growth of the cities, the movement of urban people to suburban areas, and the centralization of schools in rural areas, there really weren't many truly rural schools left in New York State. . . .

Had Dr. Palmer not retired when he did in 1952, he most certainly would have urged a change in his title to something like "Professor of Science and Environmental Education."¹⁰

As for the Leaflets, Rockcastle shared that when he took over the authorship he "found the title misleading and misrepresentative."¹¹ Nature study topics were no longer the focus of the Leaflets. To better reflect the content, Rockcastle changed the title from Cornell

Rural School Leaflets "to Cornell Science Leaflet--a title that continued until the demise of the Leaflets about 1975."¹²

Another interesting change that has occurred, obvious when the secretary-treasurer's report was reviewed, were prices. The cost for 1,000 programs, December 27, 1929, was \$18.50. Five hundred programs were mailed to Earl R. Glenn and also to S. Ralph Powers. The postage for this task was \$.31.

No reference was made as to the further distribution of these programs. Nor was any information provided as to the attendance at the open programmed meeting. However, this was the first time the Association had openly publicized their annual meeting. With the distribution of 1,000 programs, and the circulation of programs printed in Science Education, the attendance at the open meeting, hopefully, surpassed 60. Sixty had been the attendance reported at the unadvertised Cleveland meeting.

A reversal of a rescinded motion pertaining to NARST's charter membership was noted as Powers' secretary-treasurer report was further reviewed. By unanimous vote, the members agreed that everyone who received Eikenberry's announcement of the first meeting, responded favorably, and "paid dues for the first year deserved to be recognized as a charter member."¹³ This motion was nearly identical to one passed on February 27, 1928, and then unanimously rescinded on February 29, 1928. In reference to this favorably reversed motion Hanor A. Webb wrote:

This was a fair decision. In my own case I had been eager and earnest to volunteer for the new labors. I could not be at the first meeting--the creeks were too high between Nashville and Boston. I was there in spirit, and so were others. All thirty

three of us joined in the causes to which this membership dedicated us. I value the star by my name, designating me a Charter Member of NARST, as one of my most cherished professional emblems.¹⁴

This reversed motion of February 24, 1930, returned the number of charter members from 16 (Table 1) back to 32. The only name now appearing in Table 1 that was not a charter member is A. (Archer) W. Hurd. He was elected to membership in 1928. Persons elected to membership the following year, 1929, include:

W. W. Knox	Ralph E. Horton
State Dept. of Education	Seward Park High School
Albany, New York	New York City, New York
Florence G. Billig	Clarence M. Pruitt
Board of Education	University of Alabama
Sacramento, California	University, Alabama
J. A. Drushel	
New York University	
Washington Square East	
New York City, New York ¹⁵	

In addition to the motion on charter membership, several other motions met with unanimous approval. The first was the decision that all papers presented at NARST meetings "shall be presented with the understanding that if the paper is to be published the Association shall have first claim to it."¹⁶

Other important decisions focused on committee reports. The first of these reports was that of the Committee on the Constitution and Bylaws, consisting of Edward E. Wildman, chairman, N. Henry Black, and Hanor A. Webb. With a few modifications the constitution and bylaws were unanimously approved. The final draft of these two important documents appears as Appendix C-1.

Article IV of this initial constitution established a fairly open membership policy. There was unlimited membership to those interested "in the efficient teaching of science . . . [and who had] demonstrated ability in the field of educational research."¹⁷ However, any person who had "contributed outstanding service of any nature may, upon recommendation of the Executive Committee and approval of members, be admitted to membership."¹⁸ Article VII of the constitution showed that the annual dues had been increased to \$5.00 and that they were payable at the time of the annual meeting. Dues did not increase again until 1953, at which time they went up to \$7.00.

The report on the constitution and bylaws was followed by the report of the Committee on Publications. After hearing the report, members unanimously voted to exercise the option held on Science Education and purchase it from the owner, Walter G. Whitman.

The final meeting report was that of the Nominating Committee. The presented slate of officers, for the first time, included a vice president. Elected by unanimous ballot were:

Elliot R. Downing, President
Francis D. Curtis, Vice President
S. Ralph Powers, Secretary-Treasurer
W. L. Eikenberry, Member at Large
Ralph K. Watkins, Member at Large

Thus, Francis D. Curtis became the first official vice president of NARST (Appendix D-1a). In this capacity, according to the Bylaws, Article I, Section 2 (Appendix C-1), Curtis would not only "preside at all meetings in the absence of the President" but would be "Chairman of the Executive Committee."¹⁹ The reason for the vice president,

instead of the president, chairing the Executive Committee was not given.

Fourth Annual Meeting: First Foreign Presenter
February 23-24, 1931, in Detroit²⁰
President, Elliot R. Downing

A Masonic Temple in Detroit was the location of the opening session of the Fourth Annual Meeting. Ten papers were scheduled for this first day, Monday, February 23, 1931. One of the presented reports was a paper by Lois Meier (later Lois Meier Shoemaker), presumably the second woman to join the Association. On the following meeting day, February 24, the first NARST symposium was held. The general theme of this first symposium was "An Integrated Program of Science Teaching for the Grades of the Elementary and Secondary Schools." Contributors to the symposium were S. Ralph Powers, E. Laurence Palmer, W. W. Knox, and Ellsworth S. Obourn.²¹

Twenty-one members attended the Monday dinner meeting at the Belcrest Hotel. After dinner, George A. Rommert of Munich, Germany, gave an address on "The Use of Microprojection Methods in Teaching Living Organisms." Members were impressed by Rommert's "command of techniques for growing cultures of microorganisms . . . [and] the clarity with which these organisms were shown in the screen."²²

The membership at the time of this NARST meeting totaled 40. Among these 40 members was the first life member. However, the name of this individual was not listed in the minutes. The constitution allowed life membership to be obtained by paying \$100 for dues. The number 40 also took into account the first membership resignation, J. A. Drushel.

The main item of business at this meeting centered around the journal, Science Education. Significant funds, \$3,500, had been received towards its acquisition and operation. This prompted considerable discussion about the courses of action that should be taken.

Another motion requested that the president appoint a committee of three to study the problems of teacher training in science. They were to consider teachers of elementary, junior, and senior high schools as well as teachers of undergraduate and graduate programs in education. From the discussion leading to the committee formation, the suggestion came to make teacher training the symposium topic for the next annual meeting.

Fifth Annual Meeting: Thirty-first Yearbook
February 20, 22-23, 1932, in Washington, D. C.²³
President, Elliot R. Downing

The opening session of this three-day meeting was the first time NARST had planned a joint program with other organizations. The National Society for the Study of Education (NSSE) and the National Council of Supervisors of Elementary Science (NCSES) met with NARST on Saturday evening, February 20, 1932.

This meeting with NSSE and NCSES was mentioned in a 1964 Science Education article about CESI, the Council for Elementary Science International (formerly NCSES). The author, Clarence M. Pruitt, stated that the discussion topic for the meeting had been the Thirty-first Yearbook of the National Society for the Study of

Education, Part I, "A Program for Teaching Science." Pruitt added that

[t]his yearbook had been prepared by a committee [NSSE appointed] composed of only NARST members, headed by Dr. S. Ralph Powers as Chairman. (Other NARST members were: Francis D. Curtis, Gerald S. Craig, Elliot R. Downing, Charles J. Pieper, and Ralph D. Watkins. Contributing writers were all members of NARST: Florence G. Billig, Lillian Hethershaw Darnell, Morris Meister, and Victor H. Noll.) This yearbook was destined to exert more influence on the teaching of science in American schools than any other yearbook ever published and one might accurately say almost any other publication.²⁴

Another item noted from Pruitt's article, was an NCSES decision that had occurred earlier this same day. The group had voted to request that the NARST-affiliated journal, Science Education, also become the official publication for NCSES. The request was granted.

Formal sessions were not held on Sunday, and so the meeting did not resume until Monday, February 22. The meeting program was devoted to two topics. The first was the report of the Association Committee on Teacher Training in the Teaching of Science, and the second was a continued discussion of the Thirty-first Yearbook.

Tuesday, February 23, was the third day of the annual meeting. On this final day, seven researchers, Otis W. Caldwell, R. C. Bedell, Jessie W. Clemenson, Wilbur S. Beauchamp, Victor H. Noll, Benjamin C. Gruenberg, and Morris M. Meister, presented papers.

One of the important agenda items at NARST's business meeting was the report by the Committee on Publications. The committee announced that a group of supporters, including NARST, had purchased Science Education. A business organization, Science Education, Incorporated, had now been formed.

Sixth Annual Meeting: Pro Tem Chairman
February 26-28, 1933, in Minneapolis²⁵
President, Francis D. Curtis

The Sixth Annual Meeting was convened at the Curtis Hotel in Minneapolis, Minnesota. This meeting was the first NARST meeting held west of the Mississippi.

Attendance was low; as evidenced by the following quotation, even officers were not present. "In the absence of the officers and Executive Committee of the Association Mr. Ralph Watkins was appointed Chairman pro tem of the meetings."²⁶ No reference has been found as to why none of the five Executive Committee members was able to attend. Possibly, the Depression was an influence; or since it was winter, maybe the weather was a factor. Distance probably created problems with transportation costs and accessibility. Most NARST members, at that time, lived in the East, and the railroads were the primary form of travel. According to NARST member, Paul H. Joslin, "Minneapolis was not easily accessible in one day's travel time."²⁷ Clarence H. Boeck, who was a graduate student at the University of Minnesota in 1933, suggested "another possible reason for the low attendance. There was a real fear on the part of the eastern U.S. members that they might be attacked by the Indians encamped on Nicollet Avenue."²⁸ This was an ongoing jest between Midwesterners and Easterners.

As for business transacted, one item brought up for consideration was the preparation of a NARST directory. This was the first time any kind of a membership directory had been mentioned in any NARST

minutes. However, the fruition of the directory did not appear to occur until four years later, after the Tenth Annual Meeting (1937).

Several committees were appointed at the 1933 meeting.²⁹ Two of the committees dealt with natural science curriculums, elementary and secondary. Another was to investigate measurement possibilities for scientific attitudes. A fourth committee was formed to consider the feasibility of a national council of science teachers. The formation of a national council for teachers continued to be prevalent in the minds of these science educators. A fifth committee was formed to consider membership dues. However, this committee had an interesting twist in their assignment, when compared to most such committees. They were to consider reducing annual fees. Here again one might think that the Depression had a role. Instead, the problem appears to have been that NARST had a surplus of money.³⁰

Seventh Annual Meeting: First with AERA
February 25-27, 1934, in Cleveland³¹
President, Ralph K. Watkins

The Seventh Annual Meeting returned to the site of the Second Annual Meeting, the Hotel Cleveland. It began Sunday evening with a 6:30 p.m. dinner meeting, for members only, as did the meeting of the previous year. Twenty-nine of the 49 members were present.

A major agenda item was the report of the committee considering the possibility of an enlarged organization or the formation of a "National Council of Science Teachers."³² The report was made by the chairman, Ralph K. Watkins. Two parts of the report formally adopted by NARST were:

1. That the N. A. R. S. T. maintain its own identity regardless of movements to form a National Council of Teachers of Science;
2. That the N. A. R. S. T. cooperate with any other movements in the formation of a National Council of Teachers of Science.³³

During the business meeting the next day, two amendments to the constitution were proposed and subsequently tabled. The first pertained to the length of time a person could hold office and the second pertained to membership. The membership statement in Article IV under scrutiny was, "Individuals who have contributed outstanding service of any nature may, upon recommendation of the Executive Committee and approval of members, be admitted to membership."³⁴ As a result of the debate surrounding these amendments, two committees were formed. One would make recommendations on tenure in office and membership in the Executive Committee. The other would develop potential qualifications for Association membership.

The final day of the Seventh Annual Meeting was held jointly with the American Educational Research Association (AERA). This was the first joint program meeting of these two associations. This arrangement had been made as part of the activities of the committee appointed to consider an enlarged organization or the formation of a national council for science teachers. The membership was pleased with the results of this joint venture and, through formal motion, advised the Executive Committee to continue this cooperative relationship. The cooperative relationship did continue. Frequently NARST met with AERA. In 1970 NARST developed a policy to meet, if possible, with AERA every other year. On alternate years NARST was to meet with NSTA.

Presented at this first joint meeting with AERA was a paper by Harry A. Carpenter, a charter member of NARST. His paper, "Experimentation with Teaching Seventh Grade Science by Radio," is noteworthy because it represents an interesting piece of science education history. Carpenter was the science supervisor for the Rochester Public Schools. A little more than a year prior to this annual meeting, on February 7, 1934, he gave the first science program of the Rochester School of the Air. As the result of the success of Carpenter's work, radio instruction within the schools expanded to include fifth through eighth grade pupils in over 250 schools. Between 20,000 and 25,000 children were registered each semester for the courses. Carpenter continued the science broadcasting work "until June 1941 when it was turned over to someone else."³⁵

Eighth Annual Meeting: First Program Committee
February 24-26, 1935, in Atlantic City³⁶
President, Archer W. Hurd

The availability of railroad routes was always a consideration when selecting meeting sites for these earlier annual meetings. For this reason the rail accessibility of Atlantic City made it a popular meeting location for many of the earlier NARST meetings.³⁷ The table in Chapter IX pertaining to meeting distribution helps illustrate Atlantic City's early popularity.

The Hotel Chelsea was the headquarters for this Atlantic City meeting. Sessions for committees began at 9:00 a.m. Sunday. The dinner meeting was scheduled as usual for 6:30 p.m. that evening.

This meeting was the first time that arrangements for the entire program were entrusted to a Program Committee. For this reason,

Program Committee Chairman, Morris M. Meister, shared with the membership the experiences his committee encountered in fulfilling its function. Since these committee experiences and suggestions impacted future program planning, they are listed here as they appeared in the report.

- a. It proved very difficult to discuss plans by mail. The committee should not be too widespread geographically.
- b. The committee did not fully understand its relationship to the Executive Committee in assuming responsibility for the program. The chairman recommends that the Executive Committee assume responsibility for policy and that single programs or parts of programs be turned over to the Program Committee.
- c. The committee was not quite certain as to the desirability of inviting "outside" speakers. This matter should be decided by the membership at an early date.
- d. In view . . . of our experiences in arranging the 1935 program, the committee urges that no complicated procedure for program-making be adopted by N.A.R.S.T.³⁸

Besides the Program Committee report, nine other committee reports were presented. Considerable time was spent discussing the report of the NARST Board of Experimentation. This Board consisted of 15 members located "in strategic experimental centers."³⁹ A cooperative plan of experimentation, utilizing the research centers,

was drawn up, based upon the findings of the research conducted the preceding year by the Committee on Criteria for Selecting Subject Matter for Science Instruction. . . . The plan included a request to the General Education Board [in New York] for a fund of approximately \$100,000 to finance the proposed experimental program. . . . Experimentation was to concentrate on the preparation of instructional units to stress the development of scientific attitudes and facility in the use of the scientific method, particularly.⁴⁰

The formal request to the General Education Board was refused. However, informal communication with that Board led NARST members to feel that grant money might become available should the Association get "a worth while investigation under way."⁴¹

Questions, regarding this report, that were discussed at the meeting included: "Is it feasible? Shall we launch a nation-wide experimental or research program? Shall we revise the original plan and make further requests for research funds?"⁴² As a result of this discussion and the report, the membership voted to continue the board of experimentation.

Other business transacted at the meeting included the appropriation of \$100 for life membership to Elliot R. Downing, and a like amount for life membership to Otis W. Caldwell. Both men had reached the age of retirement and had made numerous contributions to the profession. The secretary was instructed to inform these individuals of their new membership status. This vote increased the number of life members in the Association to three.

The total number of members at the time of this meeting appears to be 59. Twelve new members accepted election to membership during the years 1934 to 1935. Of the 12 new members, 9 were from universities and teachers colleges, 2 were from public school systems, and 1 was from the General Education Board. Three were women active in the elementary science education field. This brought the known total of women in the Association to six: the first woman, Florence G. Billig, no longer in California but at the College of Education, Colleges of the City of Detroit; the second woman, Lois Meier Shoemaker, State Teachers College, Trenton, N. J.; probably the third woman, Anita D. Laton, University of California; new member, Myrtle Johnson, San Diego State College; new member, Bertha Parker, University School,

University of Chicago; and new member, Jennie Hall, Minneapolis Public Schools.

Most of the membership appeared to be very involved in the activities of the Association. Beyond the Executive Committee, consisting of 5 members, and the board of experimentation, consisting of 15 members, this author found 15 other committees. Membership on these various committees ranged from the Publications Committee of 3, to the Elementary School Curriculum Committee of 10. This meant that there were at least 85 positions to fill with the 59 members. Of the 59, an unknown number were retired, and 12 were new. However, names of 6 new members were found among committee member names.⁴³

Along with the business meeting minutes, the minutes of the Executive Committee were published. This was the first time that minutes of a NARST Executive Committee meeting had been published in Science Education. In these minutes most of the previously discussed committees were found. One of the special committees listed had the task of drawing up a list of active investigations on science education. Victor H. Noll was appointed as chairman. Another special committee had been established due to a recommendation of the board of experimentation. This committee, the Committee of Five, was assigned "to prepare a monograph setting forth a possible program of research of this Association during the next few years."⁴⁴ Each member of the Committee of Five was designated as chairman of one of the following subcommittees:

- a. Committee on the Education of Teachers: Ralph K. Watkins, Chairman
- b. Committee on Elementary School Curriculum: Florence G. Billig, Chairman

- c. Committee on Scientific Attitudes: Francis D. Curtis,
Chairman
- d. Committee on Secondary School Science: Ellsworth S. Obourn,
Chairman
- e. Committee on Junior College Science: Ralph W. Tyler,
Chairman⁴⁵

The Committee of Five, with occasional subcommittee modifications, was an active NARST committee during prewar years. Their reports were presented at annual meetings and published in Science Education.

In addition to the committee reports and business of the Eighth Annual Meeting, the program of the second day included three papers and a symposium. The theme of the Symposium was "Teaching Science for the Purpose of Influencing Behavior."⁴⁶

On the third and final day of this Eighth Annual Meeting, NARST met jointly, for the second year, with AERA. The theme for their combined meeting was "Applications of Educational Research to Actual Practice."

Ninth Annual Meeting: First Bylaws Change
February 23-25, 1936, in St. Louis⁴⁷
President, Gerald S. Craig

Gerald S. Craig called the dinner meeting to order Sunday evening, February 23, in the Daniel Boone Room of the Hotel Statler. Eight committee reports were heard that night.

The business meeting of the next day included what appears to be NARST's first Auditing Committee Report. The report by committee members Ellsworth S. Obourn, chairman, Glenn Blough, and Hanor A. Webb, was approved and mailed to members. No evidence of an Auditing Committee or report of such was found prior to this meeting.

Before this meeting, the Committee on Constitutional Revision mailed the proposed constitution and bylaws to the members. The proposed revisions were approved by the membership. However, the only changes documented in the minutes pertained to Article I of the Bylaws. With these revisions, the vice president was no longer chairman of the Executive Committee. This responsibility now fell to the president.

The minutes of the Executive Committee were recorded in Science Education immediately following the annual business meeting minutes. In these minutes the names of 9 new members were recorded. However, the minutes indicated that 10 of 17 individuals accepted membership in 1935. Three of the members included: a future president of NARST, G. P. Cahoon, Ohio State University; the future first president of NSTA, Philip G. Johnson, University of Nebraska; and the seventh woman to become a member, Lillian Heathershaw Darnell, Drake University, Des Moines, Iowa. These new members brought the membership to about 70.

At the executive meeting changes were made in the Committee of Five. The subcommittee on scientific attitudes became a separate, independent committee and the subcommittee of adult education was added in its place.

Near the end of the meeting there occurred a discussion of the next annual meeting. One suggestion proposed a joint meeting with the "National Council of Supervisors of Elementary Science" (NCSES). The last meeting with this organization had occurred in 1932. However, in 1935, NCSES changed its name to the National Council on Elementary Science (NCES).⁴⁸ Apparently, people were not yet in the habit of

using the new name. The reference in NARST's minutes still carried the word "Supervisors."

Tenth Annual Meeting: Southern Meeting
February 20-23, 1937, in New Orleans⁴⁹
President, Walter G. Whitman

The Tenth Annual Meeting, held in New Orleans, was the first time NARST had met in the South. As a matter-of-fact, it was the only meeting held in the South within a 52-year time span. Not until 1979, did NARST return to the South by holding a meeting in Atlanta.

The Tenth Annual Meeting could truly be labeled the "Meeting of Joint Meetings." On February 20, 1937, NARST held a joint meeting with the National Council on Elementary Science (NCES). Five years earlier, on the same date, NARST had met with this group for the first time. That meeting had been to discuss the Thirty-first Yearbook. This meeting was devoted to papers by Francis D. Curtis and Gerald S. Craig and to a demonstration of Erpi Teaching Films.⁵⁰ The program for February 22 was again a joint meeting. However, this day NARST met with the Society for Curriculum Study (SCS). A report on the curriculum-related work of NARST's Committee of Five was presented. This report was followed by a panel discussion of the preliminary report of the Science Committee to the Commission on Secondary School Curriculum of the Progressive Education Association. Five of the seven Science Committee members and panel discussants were NARST members.⁵¹

On February 23, a third organization, AERA, for the third time in their history, assembled with NARST for a meeting. The first time had

occurred in 1934 at the Seventh Annual Meeting. Five NARST members presented research reports at this third session.

Still a fourth group entered the scene. The National Association of College Teachers of Education invited NARST to a meeting on Wednesday, February 24.

Eleventh Annual Meeting: "Double-barrelled Meeting"
February 25-26, 1938, in Philadelphia
February 27-March 1, 1938, in Atlantic City⁵²
President, Hanor A. Webb

At the Silver Anniversary Meeting, in 1952, Hanor A. Webb recollected that he "was president at [this] double-barrelled meeting in Philadelphia and Atlantic City."⁵³ His presidential address for that meeting had been entitled "Apprenticed to Aristotle."⁵⁴ Webb further reminisced about this Eleventh Annual Meeting that "[a]fter draping the shoulders of S. Ralph Powers for ten years, the secretaryship fell as a mantle around the stalwart neck of Ellsworth S. Obourn."⁵⁵ Obourn had been elected at the Tenth Annual Meeting, but this was the First Annual Meeting for which he recorded the minutes.

To accompany Webb's reminiscences of NARST with members' recollections of Webb seems appropriate. Jacqueline Buck Mallinson referred to him "as a southern gentleman."⁵⁶ Clarence H. Boeck, recalled how "at meetings Webb would sit down at any available piano and play just for enjoyment."⁵⁷ Science Education published the Silver Anniversary address from which Webb's recollections in the

preceding paragraph had been taken. At the end of Webb's article the following editor's note appeared:

In characteristic Hanorian style, Professor Webb has graciously and modestly underemphasized the important part he played and the influence he exerted in the formative years of NARST. On more than one occasion according to eye-witness accounts when the debate waxed warm and furiously, his voice soothed the Angry Spirits and the Dove of Peace settled down upon the assembly and it spake as one Voice--and a major crisis had been averted once more.⁵⁸

These quotations provide insight into the man who presided over the Eleventh Annual Meeting. The Philadelphia portion of this two-city meeting was held with NCES. Previously, NCES had met with NARST in 1932 and 1937. This year, at the joint dinner meeting, a report with motion pictures of the International Education Association Meeting in Japan was presented.⁵⁹ This was the second time an internationally-related presentation had been found in a planned program. The first had been the German educator who had presented at the Fourth Annual Meeting in 1931.

The discussion of Association policies was extensive at the 1938 business meeting. The proposed policy change eventually having the most impact on NARST leadership was the plan of succession in office through membership on the Executive Committee. The policy "had been quite irregular regarding the succession of officers through the chairs of the Association."⁶⁰ President Webb proposed that one new member be added to the Executive Committee each year. This new member would, in the next year, elevate to the vice presidency, who in turn would succeed to the presidency. The president would remain on the Executive Committee for one year after completing the term as president.

When past records of offices held were examined, the records showed that some individuals had remained on the Executive Committee for several terms with or without eventually progressing through the chairs. Also noticed was that the 1934 president, Ralph K. Watkins, had not remained on the committee after his presidency. Further noted was that even though the 1938 membership approved of this proposed plan of officer succession, the plan was not effectively implemented until the postwar year 1948. Even when the Nominating Committee tried implementing the plan, extenuating circumstances, especially those brought about by World War II, interfered.

In his plan for succession of officers, Webb had additionally proposed that specific duties be assigned as follows:

1. The new committee member would prepare a summary of that year's science education research.
2. The vice president would be made chairman of the annual program committee.
3. The outgoing president would chair the Constitutional Revision Committee.

Although this duty roster was followed for the officers of the upcoming year, the minutes did not mention whether such duties would become a part of NARST policy. However, having the vice president chair the Annual Program Committee must have been proven desirable because by 1961 this practice was included in the NARST Bylaws.

Since the time of its proposal at the Second Annual Meeting of NARST, the idea of NARST publishing yearbooks remained in the backs of members' minds. Finally, at this 1938 meeting the task was

undertaken. The Publications Committee was instructed to solicit articles pertaining to selected aspects of secondary school science. These articles would "be published in Science Education and subsequently bound as a Yearbook of the Association."⁶¹ In addition, the new president was to investigate the possibility of cooperating with other organizations in the production of a yearbook.

At the 1938 Executive Committee meeting the difficulties of accomplishing committee work by mail was one topic discussed. Additionally, funds were voted for "publication of certain of the subcommittee reports of the Committee of Five."⁶² Another discussion evolved around the Association's policies regarding standing committees, publication of committee reports, and possible future committee work and publications.

Twelfth Annual Meeting: Policies Revision
February 26-28, 1939, in Cleveland⁶³
President, S. Ralph Powers

The Policies Committee presented 11 items for adoption by the Association. Ten were approved. The major aspects of the policies adopted are summarized. The first was that NARST should assume an "active and leading role in stimulating research and publishing summaries of research on practical problems of science teaching."⁶⁴

Most of the other policies dealt with committee formation and functioning. These policies had evolved from the extensive discussions, at the Eleventh Annual Meeting, regarding committees. Among the approved policies was the decision to divide the whole membership into working committees. The annual meetings would then be used as work sessions for these committees. At least one session,

however, would exist for the committees to give their reports and for contributed papers.

To administer this plan of meeting and coordinate committee work, a Coordinating Committee with a rotating membership was elected. This Coordinating Committee was to work with the Program Committee in planning the next annual meeting.

Other business included the election of officers. In the past, only one person was proposed by the Nominations Committee for each of the five Executive Committee positions. Each year the proposed slate of officers was unanimously elected by the membership. However, at this meeting additional nominations from the floor required that a ballot vote be cast for both the office of president and for the new Executive Committee members. This was the first time that an election of NARST officers required a ballot vote. The result of the voting was that charter member, Otis W. Caldwell, became president, and Fred G. Anibal agreed to serve a second term as vice president. S. Ralph Powers and Charles J. Pieper became the new members on the Executive Committee. E. Laurence Palmer was the individual losing the vote for this position.

Thirteenth Annual Meeting: Area Committees
February 24-27, 1940, in St. Louis⁶⁵
President, Otis W. Caldwell

The 1940 meeting was the Second Annual Meeting to be held west of the Mississippi. The paper sessions and luncheon for the opening day of this annual meeting were held jointly with NCES. This was the Fourth Annual Meeting in which NARST had met with NCES.

Otis W. Caldwell, charter member, was president for this Thirteenth Annual Meeting. Hanor A. Webb in his Silver Anniversary tribute to NARST, noted that

[o]ne may wonder why this dean of science teachers had not been honored much earlier. It was in deference to his modesty--his preference that younger men receive the recognition, and the responsibilities, for the sake of their own development. He accepted the presidency with protests--but if NARST was ever to show him this respect, it was time to do so.⁶⁶

Caldwell was 70 years old, but far from retired, when he assumed the presidency of NARST. His "influence in NARST, as in other scientific organizations--even the great American Association for the Advancement of Science--was incalculable."⁶⁷ Clarence H. Pruitt recounted that "few, if any men, in American science or American education led a more active life."⁶⁸

At the time of this meeting, the membership stood at 74. Following the policy adopted at the 1939 meeting, the membership was now divided up into research-interest committees. A questionnaire sent out by the Coordinating Committee identified the five research areas of membership interest to be: curriculum, methods, evaluation, teacher training, and audio-visual materials. Two morning work sessions and one afternoon report session were devoted to the five work area committees. Members of the Science Committee of the National Education Association (NEA) were invited to attend the last work session and the report session of the area committees.

The Science Committee of NEA was itself comprised of seven members, six of which were NARST members. These individuals served as chairs of subcommittees. The report of the work of the NEA Science Committee was presented to NARST members at their business meeting.

Fourteenth Annual Meeting: "Grey Old Owl"
February 22-26, 1941, in Atlantic City⁶⁹
President, Harry A. Carpenter

The Saturday opening session of the Fourteenth Annual Meeting was held jointly with NCES (later known as CESI), at the Hotel Traymore. The dinner meeting of the following day was held at the Hotel Claridge. At this dinner meeting Harry A. Carpenter, a charter member of NARST, delivered his presidential address entitled "Word to the Wise from a Grey Old Owl." This speech was the last time Carpenter addressed his NARST colleagues. He died in April of the following year at age 64.

On Monday and Tuesday, the five Work Area Committees held sessions. This was the second and final year the Work Area Committees met. At the business meeting, the membership voted to discontinue the plan of Area Committees.

For the second year, a progress report of the NEA-sponsored Science Committee, chaired by NARST member Ira C. Davis, was presented. This occurred on Tuesday afternoon. Interesting to note was how some parts of history were seemingly repeating. Discussions among colleagues, resulting from this committee's work, were stimulating interest in the formation of a national council of science teachers. This second national organization was to be affiliated with NEA.

As it had with ASTA's founding in the 1930s, NARST became actively involved in the formation of this second teachers group. At the 1941 meeting, NARST duplicated an official motion of the thirties. Thus, a member was once again appointed to represent NARST and work with

groups interested in forming a national council for science teachers. The 1941 NARST president, Harry A. Carpenter, had been the member appointed during the 1930s, when ASTA was being founded. His involvement had led to his election as the first president of ASTA. He served as ASTA president from its founding in 1933 until 1939.

Fifteenth Annual Meeting: "Now . . . Adolescence"⁷⁰
February 15-17, 1942, in Atlantic City
President, G. P. Cahoon

At their Fourteenth Annual Meeting, NARST had requested that a summary of the first 15 years of the Association be made. However, just over two months prior to NARST's Fifteenth Annual Meeting the United States had declared its entry into the war. "[A]ll organizations were urged not to hold national conventions during World War II."⁷¹ Thus the war years greatly impeded the activities of organizations such as NARST. For this reason records of NARST minutes did not resume in Science Education until after the war. In October of 1947, the article, "Fifteen Years of the National Association for Research in Science Teaching," appeared. It had been prepared by charter members W. L. Eikenberry and Ellsworth S. Obourn, with the approval of S. Ralph Powers. Obourn's closing for that article was also found to be an appropriate conclusion for this chapter, the "Early Development of NARST."

Now we are fifteen. From the small acorn of a breakfast discussion to a formidable Association of ninety leaders in the field in fifteen years is an achievement to elicit the pride of any organization. A turn through the minutes of the Association over these years is an experience not to be forgotten. In these pages are recorded the ebbs and flows of the tide of our profession over the years.

The birth, babyhood and childhood of this organization have been guided by strong and able hands. Now we come to adolescence, strong professionally and strong financially. May the years ahead provide the leadership that will make possible the realization of the fullest potentialities of this fine group.⁷²

NOTES

¹Eikenberry, "NARST," 198.

²Ibid.

³Ellsworth S. Obourn, "'Sine Qua Non,'" Science Education 26 (February 1963): 13.

⁴Ibid.

⁵NARST, Minutes of Third Annual Meeting, 24-25 February 1930, Science Education 14 (March 1930): 556-57.

⁶NARST, Program of the Third Annual Meeting, 24-25 February 1930, Science Education 14 (January 1930): 395.

⁷Ibid., 395-97.

⁸Ibid., 396.

⁹Verne N. Rockcastle, letter to Paul H. Joslin, 5 February 1990.

¹⁰Ibid.

¹¹Ibid.

¹²Ibid.

¹³Ibid., 556.

¹⁴Webb, "Growth and Activities," 13.

¹⁵NARST, Minutes Third Annual Meeting (1930), 561.

¹⁶Ibid., 556.

¹⁷Ibid., 558.

¹⁸Ibid.

¹⁹Ibid., 559.

²⁰NARST, Minutes of the Fourth Annual Meeting, 23-24 February 1931, Science Education 15 (March 1931): 269-70.

²¹Eikenberry and Obourn, "Fifteen Years," 253.

²²NARST, Minutes Fourth Annual Meeting (1931), 269.

²³Eikenberry and Obourn, "Fifteen Years," 254.

²⁴Clarence M. Pruitt, "CESI-Science Education: End of an Era," Science Education 48 (October 1964): 311-12.

²⁵Eikenberry and Obourn, "Fifteen Years," 254-55.

²⁶*Ibid.*, 255.

²⁷Paul H. Joslin, former NARST Executive Secretary, interview by author, 7 February 1990, Des Moines, Iowa.

²⁸Clarence H. Boeck, letter to Paul H. Joslin and author, 16 October 1991.

²⁹Eikenberry and Obourn, "Fifteen Years," 255.

³⁰NARST, Minutes of the Seventh Annual Meeting, 25-27 February 1934, Science Education 18 (March 1934): 129.

³¹*Ibid.*, 129-31.

³²*Ibid.*, 130.

³³*Ibid.*

³⁴*Ibid.*

³⁵Otis W. Caldwell, "Harry A. Carpenter," Science Education 26 (October-November 1942): 154.

³⁶NARST, Minutes of the Eighth Annual Meeting, 24-26 February 1935, Science Education 19 (April 1935): 90-93.

³⁷Joslin, interview, 7 Feb. 1990.

³⁸NARST, Minutes Eighth Annual Meeting (1935), 90.

³⁹*Ibid.*, 90-91.

⁴⁰*Ibid.*, 91.

⁴¹*Ibid.*

⁴²*Ibid.*

⁴³*Ibid.*, 90-92.

⁴⁴*Ibid.*, 92.

⁴⁵Ibid.

⁴⁶NARST, Program for the Eighth Annual Meeting, 24-26 February 1935, Science Education 19 (February 1935): 48.

⁴⁷NARST, Minutes of the Ninth Annual Meeting, 23-25 February 1936, Science Education 20 (October 1936): 172-74.

⁴⁸Clarence M. Pruitt, "CESI-History and Presidents," Science Education 48 (October 1964): 312.

⁴⁹NARST, Minutes of the Tenth Annual Meeting, 20-23 February 1937, Science Education 21 (April 1937): 107-10.

⁵⁰Eikenberry and Obourn, "Fifteen Years," 258.

⁵¹Ibid.

⁵²NARST, Minutes of the Eleventh Annual Meeting, 25 February-1 March 1938, Science Education 22 (March 1938): 148-52.

⁵³Webb, "Growth and Activities," 15.

⁵⁴Eikenberry and Obourn, "Fifteen Years," 259.

⁵⁵Webb, "Growth and Activities," 15.

⁵⁶Jacqueline Buck Mallinson, telephone interview with author, September 1990.

⁵⁷Clarence H. Boeck, telephone interview with author, 30 December 1991.

⁵⁸Webb, "Growth and Activities," 17.

⁵⁹Eikenberry, "Fifteen Years," 259.

⁶⁰NARST, Minutes Eleventh Annual Meeting (1938), 150.

⁶¹Ibid., 152.

⁶²Eikenberry and Obourn, "Fifteen Years," 259.

⁶³NARST, Minutes of the Twelfth Annual Meeting, 26-28 February 1939, Science Education 23 (March 1939): 158-66.

⁶⁴NARST, Minutes Twelfth Annual Meeting (1939), 161.

⁶⁵NARST, Minutes of the Thirteenth Annual Meeting, 25 February 1940, Science Education 24 (April 1940): 229-35.

⁶⁶Webb, "Growth and Activities," 15.

⁶⁷Ibid.

⁶⁸Eikenberry and Obourn, "Fifteen Years," 285.

⁶⁹NARST, Minutes of the Fourteenth Annual Meeting, 23-25 February 1941, Science Education 25 (April 1941): 222.

⁷⁰Eikenberry and Obourn, "Fifteen Years," 261.

⁷¹Philip G. Johnson, "The National Science Teachers Association: A Personal Account." Unpublished pamphlet, written by the first NSTA president, distributed at an NSTA convention during the mid-1980s, 5-6.

⁷²Eikenberry and Obourn, "Fifteen Years," 261.

Chapter IV

A NATIONAL COUNCIL OF SCIENCE TEACHERS

In researching the first 15 years of NARST history, the development of a national council of science teachers was found to be a reoccurring concern of NARST members. As evidenced by Eikenberry's quotations in Chapter II, this concern surfaced prior to, and played a vital role in, NARST's origin. In 1928, the year of NARST's birth, this concern brought the 17 soon-to-become NARST founders together. Their thought had originally been to form a national organization for science teachers. But, when the 17 came together with this thought in mind, according to charter member, Harry A. Cunningham, in

the midst of this discussion, . . . there materialized at Boston, in 1928, a new organization of a somewhat different type from that which had seemed to be uppermost for some years in the minds of many leaders in science education. This new organization, . . . [was] the National Association for Research in Science Teaching.¹

Cunningham recounted this bit of science education history to a 1934 gathering of science educators. These educators, as did the 17 who had gathered in Boston six years earlier, possessed the idea of forming a national organization for science teachers. Cunningham's speech was one illustration of the intertwining histories of NARST and the formation of the first national organization of science teachers.

Concern over the need and development of a national council of science teachers not only played a significant role in NARST's founding, but continued to be evident in several of the early meetings. Even when annual dues or surplus funds were discussed, the

national council topic would surface. Persons were appointed and committees were established to explore the national council issue and to work cooperatively with other organizations likewise interested. Reports and discussions pertaining to the founding of a national council were recurrent at the early meetings.

Thus, the concern about a national council influenced the beginning and early activities of NARST; but, reciprocally, NARST and its members significantly influenced the beginning and early activities of the first national organization of, and for, science teachers. For these reasons, an explanation of the events that led NARST members and other science educators to have such a strong interest in the founding of a national council of science teachers was included in this chapter introduction. The following quotation was taken from a personal narrative written about the establishment of the current national organization, the National Science Teacher's Association (NSTA). The author was Philip G. Johnson, an active NARST member who became the first NSTA president.

The Department of Science Instruction of the National Education Association (NEA) was established in 1895 by several dedicated university scientists and secondary school science teachers. Over the first few decades, the Department became the leader in national efforts to strengthen science in the schools, with a small number of scientists and high school teachers as active members.

The nature study movement, the rapid development of general science, and organized science teaching at the elementary school levels brought many administrators, supervisors, curriculum innovators, and classroom teachers into the Department of Science Instruction. Textbook writers and manufacturers of teaching equipment and supplies saw opportunities for service and gain through Department membership. Because of the diversity and the concentration on education issues in Department membership, many university scientists and scientifically minded teachers turned their interest to developing scientific societies and associations that became affiliated with the American Association for the

Advancement of Science (AAAS) rather than the Department of Science Instruction. Thus, a schism between scientists and science teachers began to develop. The division felt among science teachers, scientists, science educators, and science supervisors was aggravated by the school conditions during the Great Depression. Fertile ground for the conception of a new organization was evident.²

Johnson's summation of science education, preceding and during the time of NARST's founding, helps explain several of the events and concerns that intertwined with NARST's origin and were recorded in Chapter II. His preceding summarization, coupled with the background information quoted below, enhances the understanding of topics and activities reported in NARST minutes from the years (1930-1942) covered in Chapter III. Examples of such items are recounted in this chapter.

This quotation of Johnson describes the state of science education at the time the Sixth Annual Meeting was convened in 1933.

[T]here had been a great increase in the secondary school population. Youths who could not find jobs returned to school to continue their studies. Many lacked motivation and preparation. Science teachers and school administrators changed science course content and teaching strategies. Scientists became alarmed at what they called a "watering down" of science. As more students graduated from high school and entered college, scientists became increasingly dismayed by their misinformation and lack of preparation.³

When the minutes for the Sixth Annual Meeting, February 26-28, 1933, were examined, an appointment of a special committee was found. The charges of this committee would be to "formulate plans for extending membership in the NARST and to consider the feasibility of forming a National Council of Science Teachers."⁴

At the Seventh Annual Meeting, February 25-27, 1934, the first agenda item was the report of the committee considering the reduction

of dues and the problem of surplus funds. This committee had sent a letter to each member to obtain opinions. Interesting to note in the report was the fact that some individuals had suggested that this committee was connected to "the movement towards a central organization for science" teachers.⁵

The second agenda item at the 1934 meeting was the report of the committee considering the possibility of an enlarged organization or the formation of a "National Council of Science Teachers."⁶ The report was made by the chairman, Ralph K. Watkins. Two parts of the report formally adopted by NARST were:

1. That the N. A. R. S. T. maintain its own identity regardless of movements to form a National Council of Teachers of Science;
2. That the N. A. R. S. T. cooperate with any other movements in the formation of a National Council of Teachers of Science.⁷

Following the report extensive discussion ensued.

In addition, a committee, chaired by Harry A. Carpenter, was appointed to cooperate with other science teacher organizations in the consideration of establishing a national council of science teachers. Other members of this committee were John A. Hollinger, Florence O. Billig, Ellsworth S. Obourn, and Elliot R. Downing.

For this endeavor, the cooperative relationship with other science teaching organizations, seemingly, would have been excellent. As names of leaders, presenters, and active members in other organizations were encountered during this research study, NARST members were continually among them. One such example, taken from a date near that of the proposed cooperative effort, was the minutes of the Fifteenth Annual Meeting (1934) of the National Council of

Supervisors of Elementary Science.⁸ Persons named in the minutes and known to be NARST members at the time of this meeting included: president, Florence G. Billig; vice president, Walter G. Whitman; a committee chair, Ellis Persing; and presenters, S. Ralph Powers and Otis W. Caldwell. Persons elected to NARST membership in 1934 included: secretary-treasurer, W. W. McSpadden, Supervisor of Sciences, Austin, Texas; presenter, William G. Vinal, Western Reserve University, Cleveland, Ohio; and presenter, Bertha Parker, University of Chicago. Presenter, Philip G. Johnson, Teachers College, University of Nebraska became a member in 1935. Only three additional names appeared on the program.

Another example was the report of the Thirteenth Annual Meeting (1933) of the Association of Science Teachers of the Middle State and Maryland.⁹ Names of NARST members appearing in this report included: the 1933 president and 1934 member of council, W. W. Eikenberry; 1934 vice president, S. Ralph Powers; 1934 member of the council, Gerald S. Craig; and program presenters, Earl R. Glenn and Edward E. Wildman.

Several such examples of NARST membership overlapping with that of other science teaching organizations could be given throughout NARST's history. Thus, the influence and leadership of NARST and its membership was quite visible on many fronts in the field of science education.

In regard to NARST's committee chair selection of Harry A. Carpenter, at the Seventh Annual Meeting (1934), a purposeful overlap was created. The Association appointed Carpenter to chair their Committee to Cooperate with Other Organizations interested in a

national council of science teachers, because Carpenter held a related committee position for the American Association for the Advancement of Science (AAAS). In his AAAS chairmanship, Carpenter was involved in program planning for persons interested in a national organization of science teachers. This program, to be held in conjunction with the Pittsburgh AAAS meeting on December 29, 1934, resembled one presented at the Boston AAAS meeting, December 29, 1933.

As for the Boston AAAS meeting, the NARST membership attending the Seventh Annual Meeting heard a report from Otis W. Caldwell, a NARST charter member. He stated that "[a]t least 15 science teachers' organizations were represented; something more than 100 persons attending the program."¹⁰ Caldwell was Chairman of the AAAS Committee on Place of Science in Education, which had planned the 1933 Boston meeting. This committee, in conjunction with Carpenter's committee, was to plan the 1934 Pittsburgh meeting. Most individuals comprising these two AAAS committees were also members of NARST.

The final day of the Seventh Annual Meeting was held jointly with AERA. Interesting to note is that this first joint meeting with AERA was arranged by the NARST committee appointed to consider an enlarged organization or the formation of a national council of science teachers.¹¹ The membership was pleased with the results of this joint venture and, through formal motion, advised the Executive Committee to continue this cooperative relationship. A cooperative relationship with AERA continues to this day.

In the months following the Seventh Annual Meeting, NARST representative Harry A. Carpenter and his AAAS committee gathered data

and planned for the December Pittsburgh meeting. A tentative plan of organization and questionnaire were sent throughout the country to over 400 recommended teachers, members of NARST, and officers of 44 science teachers organizations. In order to develop the potential functions of a national organization, the questionnaire requested persons to list problems and concerns that a national organization might help solve. On the basis of these listings, and other pertinent suggestions, the functions of a national organization were tentatively set up as follows:

1. Develop and promote a national policy of science education.
2. Foster professionalism among science teachers.
3. Promote publication and dissemination of research results and other material of interest and value to science teachers.
4. Promote adequate training of teachers in preparation and in service.
5. Promote interest in national acceptance of science objectives and teaching methods.
6. Encourage and promote research in science education under existing research organizations and educational institutions.
7. Promote and stimulate activity in local science teachers' organizations.
8. Determine and promote a 12-year science program.
9. Serve as a professional clearinghouse for local problems of national significance.¹²

AAAS: National Organization of Science Teachers
December 29, 1934, in Pittsburgh¹³
Presiding Officer, W. L. Eikenberry

The following summarizes the AAAS authorized meeting held in Pittsburgh in 1934. This recount seems appropriate because, as shown in the introduction to Chapter IV, the history of NARST and the development of a national organization of science teachers are intertwined. In addition, NARST members played significant roles in the planning, publicizing, and presenting of this program. When the announcement and program of this special meeting appeared in the

December 1934 issue of Science Education, the heading was "National Association for Research in Science Teaching to Teachers of Science." Part of the announcement invitation follows.

The Committee invites science teachers and representatives of organizations of science teachers to participate in this meeting. We wish to give wide distribution to this invitation to cooperate. It is expected that many teachers will be interested in attending. Individuals who are not members of organizations of science teachers or of the A. A. A. S., as well as delegates from science teachers' organizations are invited. Will you please extend this invitation as you may have opportunity to do so.¹⁴

The program, printed with this invitation, began with NARST member Otis W. Caldwell stating the purpose of the meeting. The theme for the morning program was "Newer Knowledge of Interest to Science Teachers." In fulfillment of this theme three scientific presentations were given.

Luncheon arrangements for the meeting had been made by NARST member, John A. Hollinger. The cost per person was \$1.00, and up to 200 people could be accommodated.

The afternoon theme was "A National Organization of Science Teachers." The individual who had been the first president of NARST, William L. Eikenberry, was the presiding officer for this session. Five of the seven presenters he introduced were NARST members. Their presentations were: "Report of an Extended Inquiry Regarding a National Organization of Science Teachers," Harry A. Carpenter; "Could a National Organization Develop and Promote a National Policy of Science Education," Earl R. Glenn; "Could a National Organization Stimulate Professionalism Among Science Teachers?" Florence G. Billig; "How Could an Organization Encourage, Promote, Correlate and Distribute Results of Research in Science Teaching?" Harry A.

Cunningham; and "How Could a National Organization Coordinate the Activities of Existing Science Associations?" Philip G. Johnson. General discussion and recommendations followed these reports.

In Cunningham's presentation dealing with science teaching research, he proposed activities that he and other NARST members hoped the new organization would pursue. These activities included: stimulating interest in research, coordinating and correlating research reports, distributing research results through publications and meetings, evaluating and interpreting research findings, and targeting needed areas of research.¹⁵ In discussing the national organization's relationship and ability to serve as a stimulus to research centers, Cunningham suggested that

[i]t is quite conceivable that individuals and research centers might do their reporting to the National Association for Research in Science Teaching and that the Association might in turn report to the Council a summary of the activities in the field of research. At any rate, such a report to a national group would certainly promote national interest in research, advertise the National Association for Research in Science Teaching, and tend to stimulate more research.¹⁶

In discussing the need and the national organization's potential role regarding science teachers and research Cunningham contended that

many of the ordinary classroom teachers are not greatly excited about the results of our research. School executives also need to be shown the value of and the importance of putting these results into practice. . . .

There is a pressing need . . . to get the fruits of research into practical operation in the classrooms of the country. At present, the results of investigations go to a very few of the people who are actually doing the teaching. The best of these research products should be organized and distributed throughout the country. The results must not only be distributed but the classroom teacher must be shown the importance of this material and how and why it should be put into practice. It has been well said that actual practice in the schools is a generation behind the recommendations of research already made.¹⁷

Furthermore, he asserted that teachers "must see how the results of research are applicable to the settlement of individual and social problems."¹⁸

The frustrations, concerns, desires, and intentions behind Cunningham's presentation and these latter quotes are probably similar to those behind the "NARST Position Paper" written 55 years later. The first draft of the "NARST Position Paper" appeared in the June 1989 NARST News. In reference to the improvement of science teaching through research, the opening paragraph of the draft carries the following admission: "We can see little evidence that during the 61 years of its existence either NARST or any other organization has made much progress toward achieving that purpose."¹⁹

The lead sentence of the next paragraph alleged that:

Surveys and observations of science teaching practice, for example, show little evidence of changes in practice over the last 25 years and little evidence that most science teachers have been influenced by, or even know about, educational research.²⁰

In an effort to address the ever-present problem mentioned in these 1989 quotes, and in Cunningham's 1934 quotes, the "NARST Position Paper" included five activities. The first activity bears resemblance to the opinions expressed by Cunningham. It deals with "[w]orking with professional science teachers' organizations."²¹ The explanation of this activity follows:

Work to help the leadership and the members of the National Science Teachers' Association and its local affiliates understand the essential role that research-based knowledge must play in the improvement of science teacher education and in the enhancement of science teachers' professional status. Encourage the adoption of policies that lead to more rigor and the inclusion of more research-based knowledge in practitioners' publications and teacher education efforts.²²

The impact of the ideas and concerns expressed by Cunningham on the gathering of science educators is not known. However, the primary goal of the meeting was achieved. The national organization of science teachers, discussed for so many years, was a reality. The organization would be known as the American Science Teachers' Association (ASTA). The newly-organized Association was "national in scope (including Canada), . . . [and intended] to serve those interested in any aspect of the use of science in education."²³

The formation and function of ASTA, as well as its relationship to NARST, was reported at NARST's Eighth Annual Meeting, February 24-26, 1935. Harry A. Carpenter, Chairman of NARST's Committee Cooperating with the AAAS Committee of Place of Science in Education delivered the report. However, since details of his presentation were not included in the minutes, the account of the ASTA-NARST relationship could not be recorded in this study.

Problems facing science education in the 1930s were briefly described in an earlier quote by Philip G. Johnson. The quote below further portrays science teaching challenges of the 1930s. In this quote, Johnson, elected to NARST membership in 1935, recalled his teaching experience of that year.

I encountered a wide spectrum of abilities, interest, and preparation in the students I taught. My daily teaching included a ninth grade general science class at the lowest level of achievement and another at the highest level. Adjustments in science course content and teaching-learning strategies were paramount. I used every resource I could find. I was amazed to discover that so little had been done to adapt science course content and teaching strategies to meet the diversity of need among the students and their teachers.²⁴

NARST members were aware of these and other challenges teachers, such as Johnson, faced. The desire to lessen and alleviate some of these problems was prevalent among the members. This desire was a motivating factor behind wanting to see the formation of a national organization for science teachers.

At the Ninth Annual Meeting of NARST, February 23-25, 1936, Carpenter presented the report of the Committee Cooperating with the AAAS Committee on the Place of Science in Education. In this report he summarizes the founding of ASTA. He stated it "was initiated at Boston in 1933 and tentatively organized in Pittsburgh in December 1934, and was finally organized in St. Louis with duly elected officers."²⁵ He further relates that NARST accepted the invitation to become one of the first five charter affiliated organizations. This meant that NARST approval was needed on the proposed ASTA constitution and that NARST would have an official representative on the ASTA Board of Directors.

Throughout ASTA's history, NARST continued to be interested in its progress. The presidents of ASTA, such as Harry A. Carpenter (1933-1939), and most other leadership offices were members of NARST. Reports of ASTA's activities were heard at NARST meetings, and NARST consistently made sure they sent a delegate to ASTA's meetings. Hanor A. Webb, for instance, was the official NARST delegate to the ASTA meeting in Indianapolis in December 1937.

Considerable credit for NARST's involvement in the formation and guidance went to Harry A. Carpenter, the first ASTA president and

NARST's 1941 president. In a 1942 tribute to Carpenter, fellow NARST colleague, Otis W. Caldwell alleged that

[i]nterest in the professional welfare of science teachers was almost a hobby for Carpenter. Local, state, and national groups of teachers enlisted his interest. He was a wise leader in moves for improvement of science teaching by giving help to teachers. To him more than to any other is due credit for organizing and guiding the American Science Teachers Association through its first ten years.²⁶

By 1941, the time of Carpenter's presidency, events in science education history, seemingly, were repeating themselves. In 1928, 17 individuals had gathered to discuss the formation of a national organization for science teachers. Instead, in the midst of their discussions, according to charter member Harry A. Cunningham, these individuals founded a different kind of organization, a research organization. This research organization became known as the National Association for Research in Science Teaching. However, the members of the newly-founded NARST, especially Harry A. Carpenter, continued the pursuit of a national science teachers organization. This resulted in the formation of the AAAS affiliated American Science Teachers Association (ASTA).

Now, in its fourteenth year of existence, NARST was again becoming involved in the formation of a national organization for science teachers, a second such organization. The first national science teachers organization, ASTA, had been affiliated with AAAS. This second movement to form a national science teachers association was affiliated with NEA.

The National Education Association had sponsored the National Committee on Science Teaching, which was cooperatively organized in

1939 by NARST and nine other science education associations. The subcommittee work of this National Committee, chaired by NARST member Ira Davis, contributed to interest in forming an NEA-affiliated national council of science teachers.²⁷ In 1941, because of this interest, NARST once again in its history appointed a member "to contact other groups interested in forming a National Council of Science Teachers."²⁸ The resulting group effort led to the reorganization of NEA's Department of Science Instruction. Thus, in June, 1942, this NEA "Department became The American Council of Science Teachers"²⁹ (ACST).

However, 1942 was not a good time for a fledgling organization to get started. In fact, the war years were not good times for either of the national science teachers organizations. According to Robert Carleton in his book The NSTA Story, World War II

presented obstacles to vigorous professional activity, not only of individual science teachers but of their organizations as well. Neither ASTA nor the . . . ACST flourished; in fact, not only were scheduled meetings cancelled but membership enrollments dropped sharply.³⁰

In spite of the problems presented by the war, NARST members and other science educators maintained a strong interest in a national organization of science teachers. During the war years, 1942-44, science education leaders such as Morris M. Meister of ASTA and Philip G. Johnson of ACST, both NARST members, consulted and planned.³¹ The resultant action was a merger of the two national science teacher associations. In Pittsburgh, Pennsylvania, on July 4, 1944, the

National Science Teachers Association (NSTA) was born. Carleton reported that

[u]nlike most infants at birth, the new organization immediately became an orphan because both its parents--the American Council of Science Teachers and the American Science Teachers Association--ceased to exist. NSTA, however was blessed with a considerable number of nursemaids and several godfather groups. . . . Within a span of 30 years, NSTA grew to a member-subscriber roster of well over 40,000.³²

This piece of science education history is one of many examples of the impact early NARST members had in science education. They were actively involved in many science teaching organizations and committees. Members of NARST, such as Harry A. Carpenter, Otis W. Caldwell, Philip G. Johnson, Morris M. Meister, Ira C. Davis, John A. Hollinger, Florence G. Billig, Hanor A. Webb, Harry A. Cunningham, W. L. Eikenberry, Robert N. Carleton, and other NARST members, mentioned and unmentioned in this chapter, obviously had sincere interest in science teaching and its practitioners. The founding of NARST itself had stemmed from a group of dedicated science educators, not coming together for the purpose of forming a research organization, but for the purpose of pursuing the formation of a national council of science teachers.

NOTES

¹Harry A. Cunningham, "How a National Council of Science Teachers Could Encourage, Promote, Correlate and Distribute the Results of Research in Science Teaching," Science Education 19 (December 1935): 158.

²Johnson, "The National Science Teachers Association," 1-2.

³Ibid., 4.

⁴Eikenberry and Obourn, "Fifteen Years," 255.

⁵NARST, Minutes Seventh Annual Meeting (1934), 129.

⁶Ibid., 130.

⁷Ibid.

⁸NARST, Minutes Seventh Annual Meeting (1934), 131.

⁹"Report of the Association of Science Teachers of the Middle States and Maryland," Science Education 18 (February 1934): 59-60.

¹⁰NARST, Minutes Seventh Annual Meeting (1934), 130.

¹¹Ibid.

¹²Robert H. Carleton, The NSTA Story 1944-1974 (Washington, D.C.: National Science Teachers Association, 1976).

¹³NARST, "National Associations for Research in Science Teaching to Teachers of Science," Science Education 18 (December 1934): 260-61.

¹⁴Ibid., 260.

¹⁵Cunningham, "National Council," 158-60.

¹⁶Ibid., 158.

¹⁷Ibid., 159.

¹⁸Ibid.

¹⁹Andy Anderson, "First Draft of NARST Position Paper," NARST News 31 (June 1989): 12.

²⁰Ibid.

²¹Ibid.

²²Ibid.

²³Otis W. Caldwell, "How Many Organizations of Science Teachers," Science Education 19 (October 1935): 129.

²⁴Johnson, "The National Science Teachers Association," 5.

²⁵NARST, Minutes Ninth Annual Meeting (1936), 172.

²⁶Caldwell, "Harry A. Carpenter," 153.

²⁷Carleton, The NSTA Story, 10-11.

²⁸Eikenberry and Obourn, "Fifteen Years," 261.

²⁹Carleton, The NSTA Story, 24.

³⁰Ibid., 21.

³¹Ibid., 22.

³²Ibid., vii.

Chapter V

NARST'S FIRST JOURNAL: SCIENCE EDUCATION (1929-1961)

Introduction

The National Association for Research in Science Teaching was founded February 29, 1928. Only 13 months later, May 1929, their first journal was published. The cover read "Science Education: The Science Magazine for All Science Teachers" and "Formerly General Science Quarterly." Since the journal had formerly been the General Science Quarterly, the volume and issue numbers continued from where the Quarterly ended. Thus, the first official NARST journal was Volume 13, Issue 4. The subscription cost was \$1.50 per year or \$.40 per copy.

Printed on page one of this first issue was the journal title, Science Education, followed by the words, "Devoted to the Teaching of Science in Elementary Schools, Junior and Senior High Schools, Colleges and Teacher Training Institutions." Also included on the page was an editorial by the owner and editor, Walter G. Whitman. He wrote:

Thirteen years ago General Science Quarterly was founded. Its mission was to promote the teaching of general science, which was then struggling for existence. . . . The need of a journal to promote general science alone no longer exists. General science has proved its worth.¹

He acknowledged the existence of problems in science education, ranging from the elementary grades through the training of science teachers. Whitman stated that many science educators had felt

that in addition to our many special science teachers' organizations there is urgent need of some body of teachers who are interested in looking at science education from such a distance that they see not just chemistry, not just physics, not just elementary science or nature study, but rather, that they see the integration and correlation of all of them, and more, that they see the child gradually grow in scientific attitudes and acquire in graded steps significant science experiences.²

Whitman affirmed the "pressing need in science education . . . to attack the problems of science education in a scientific manner."³ Emphasized was the importance of there being at least one journal on science education whose only purpose was to report "this great work" and promote science teaching in all schools.⁴ He concluded by saying: "Such a journal has been started--you are now reading from its first number. Its name is Science Education."⁵

Prelude

Shortly after the initial meeting of NARST, in 1928, Eikenberry, president of the new organization, appointed a committee on publications. Beyond the Executive Committee, this committee on publications appears to have been the first official NARST committee. This fact emphasizes the importance NARST members placed on establishing avenues for dissemination of information relevant to their field. Members of the committee were:

Charles J. Pieper, Chairman, School of Education, New York
University, New York
Earl R. Glenn, New Jersey College of Education, Montclair,
New Jersey
Walter G. Whitman, State Normal School, Salem, Massachusetts⁶

Although all NARST members agreed upon the need for a publication, the means for accomplishing this goal was the source of many discussions that "frequently waxed warm and eloquent, for there were

contrapoints of view and contra interests."⁷ Charter member, Walter G. Whitman, had established General Science Quarterly, "for the then fledgling high school general science course. This magazine had good circulation . . . [and] Whitman was willing to sell the General Science Quarterly to NARST."⁸ However, there were objections.

Some of the objections came from the supporters of a magazine that had been established by another stalwart of NARST's early days, E. Laurence Palmer of Cornell University. His magazine, Nature Study Review,

had both quality and prestige for it carried the message of Nature Study and its place in the school curriculum in contrast to the new Elementary Science Movement. This new movement was born about the time of NARST and was supported by stalwarts such as Gerald Craig, Martin Robertson, and others. . . .

Pros and cons were debated about whether NARST should obligate itself for the funds needed, and if so, which one of the two journals within its body to try to purchase.⁹

Publication Options

The "Tentative Report of the Committee on Publications" was presented in Cleveland at NARST's Second Annual Meeting, February 25, 1929. By canvassing members of the Association, the Committee found that there was interest in developing a yearbook and in publishing in a journal. When they explored the possibilities of publishing in a journal, several member-proposed options were considered. They could

1. Utilize approximately 30 pages per issue in General Science Quarterly at no cost.
2. Purchase 30 or more pages in School Science and Mathematics at the rate of \$8.00 per page.
3. Publish in Nature and Science Education at minimum printing costs with overhead expenses assumed by the Nature Association.
4. Take over General Science Quarterly at a net cost of \$1,600 for the first year. This cost was based on the publication of four 68-page issues. Whitman, the owner, would allow the

purchase of General Science Quarterly to be met by deferred payments over a four to five year period.

Expense

Cost of 4 issues of 1500 copies	\$1600.00
Business and mailing	300.00
Promotion work	300.00
	<hr/>
	\$2200.00
Price of <u>General Science Quarterly</u>	2000.00
	<hr/>
Total Expenses	\$4200.00

Income

12 pages advertisement	\$1200.00
Subscriptions (1000)	1400.00
	<hr/>
Total Income	\$2600.00
	<hr/>
Net Expenses	\$1600.00

5. Launch a new journal at a total expense of \$2,000 for 1,000 copies of 4 issues of 68 pages each.¹⁰

Committee Recommendations

Based on the options available and the feedback from NARST members, the Committee on Publications submitted nine recommendations to the membership. The recommendations are summarized here:

1. NARST should publish materials of value to science education.
2. A yearbook, devoted to significant developments, trends, or aspects in science education, should be published annually.
3. The Association should publish at intervals throughout each year.
 - a. The purpose should be to promote an integrated program of science education.
 - b. The scope should be content and method of teaching science from kindergarten through junior college as well as problems of training science teachers and supervisors.
 - c. The content should include: current science teaching research; abstracts of past unpublished research; problems for investigation; modern research in pure and applied science; reviews of current publications in science and science teaching; personal notes; articles, general in nature, significant to science teaching; abstracts of

scientific and educational articles published in others journals.

4. The Association should accept the offer by W. G. Whitman and take over the publication of the General Science Quarterly. The suggested title for the new publication was The Journal of Science Education.
5. A corporation or organization should be developed to finance and direct the new journal.
6. An editorial board consisting of members representing various aspects of science education should be developed to act in an advisory capacity.
7. The Association should create an executive board to proceed with the suggested yearbook and journal publications.
8. A subscription price should be determined that would include a fair amount to be turned into the treasury of the Association.
9. The members should secure subscriptions and suggest, or send, to the editorial board available articles and names of possible advertisers.¹¹

Considerable discussion followed the report of the Publications Committee. The decision was made that "funds were not available to either purchase an on-going magazine or to establish an independent."¹² A motion was made to accept the offer of Walter G. Whitman, editor and owner of General Science Quarterly. His offer allowed the use of the Quarterly for one year as the official publication of the Association. At the end of the year an option would be taken for purchase of the journal. After additional extensive discussion, the motion passed by a vote of 15 to 6. A second motion recommended that the name of the publication be changed to Journal of Science Education. Further decided was that the Committee on Publications be continued and also represent the Association on the editorial board of the journal.¹³

Science Education, Incorporated

In the "Editorial Comments" introducing the first issue (November 1929) of Volume 14, the Editorial Board of Pieper, Glenn, and Whitman

listed the eight major fields they intended to cover in Science Education. The fields were

(1) Nature Education and Elementary Science, (2) Junior High School Science or "General Science," (3) Senior High School Biology, (4) Senior High School Physics, (5) Senior High School Chemistry, (6) Training of Science Teachers, (7) Supervision of Science Instruction, and (8) Research in Science Education.¹⁴

The editors further stated that the book review section would be enlarged and that beginning with the next issue a section on abstracts would be started. These abstracts would summarize pertinent articles appearing in other educational periodicals and relevant investigations completed throughout the country.

Because of the increased scope of the journal, 21 associate editors, 2 or 3 for each of the eight previously listed fields, were added.¹⁵ These eight fields later became departments, and the editors became known as department editors instead of associate editors. All of these individuals were NARST members. This meant that 24 of NARST's 38 members (more than 63%) were involved in producing the journal.

Purchase

By the time of the Third Annual Meeting, February 24-25, 1930, three issues of Science Education had been published. The journal had been enthusiastically received. However, Association funds were still not available. Consequently, according to Obourn, "somewhat in a move of desperation,"¹⁶ a group of loyal NARST members among whom were Gerald S. Craig, Walter G. Whitman, Earl R. Glenn, Florence G. Billig, Charles J. Pieper, and Clarence M. Pruitt offered to solve the problem by purchasing General Science Quarterly. Because of the success of

the trial publication period, the members present at the Third Annual Meeting unanimously approved this purchase of Science Education from the owner, Walter G. Whitman.¹⁷ The responsibility for financial support of the journal was then vested with the Publications Committee, which also served as the Editorial Board. The agreement with the Association was that the supporters would share the losses and profits.

In February 1931, at the Fourth Annual Meeting, Chairman of the Publications Committee, Charles J. Pieper, reported "that pledges and cash for \$3500 had been received towards taking over and operating Science Education."¹⁸ The Association decided that a presidential appointment of a "Holding Member" was in order.¹⁹ The Holding Member was to protect the interests of the Association in the journal and to represent NARST in the business affairs conducted by the Publications Committee. The Holding Member was not to be one of the financial supporters of Science Education. President Eikenberry, subsequently, appointed Secretary-Treasurer S. Ralph Powers to the position.

During the summer of 1931, Whitman sold the journal to the following group of NARST members: Charles J. Pieper, Earl R. Glenn, Florence G. Billig, Gerald S. Craig, Walter G. Whitman, and Clarence M. Pruitt.²⁰ This new group ownership of the journal soon became known as Science Education, Incorporated. The officers of Science Education, Incorporated were: Pieper, president; Glenn, vice president; and Pruitt, secretary-treasurer. The original Publications Committee continued as the Editorial Board: Pieper, editor; Glenn, business manager; and Whitman, an associate editor.

Science Education, Incorporated, established its office in New York. The office address, 525 West 120 Street, New York City, listed in Volume 16:4, remained the same throughout NARST's affiliation with the journal.

Printing

The first issue copyrighted and produced by Science Education, Incorporated, was Volume 16:1, published in October of 1931. When the magazine was owned and published by Whitman, it had been printed in Salem, Massachusetts. Apparently, the first two or three issues of this volume were printed in Menasha, Wisconsin. Noted on the title page of 16:1 was the application for the second class mail entry to be transferred from Salem, Massachusetts, to Menasha. In addition, 16:2 indicated that address changes and subscriptions were to be sent to the Menasha address or to the business manager, Earl Glenn, in New Jersey. However, by the fourth issue of Science Education, the publisher had changed and was listed as "The Science Press, Grand Central Terminal, New York, and Lancaster, Pennsylvania."²¹ The Lancaster, Pennsylvania, branch of Science Press continued publishing Science Education through Volume 21 (1937).

The 1938 printing contract was awarded to Boyd Printing Company, Incorporated of Albany, New York. The Boyd firm produced Science Education throughout the remaining time the journal was affiliated with NARST.

Changes

Volume 16:1, the first issue copyrighted by Science Education, Incorporated, was also the first issue carrying the inscription "The Official Journal of the National Association for Research in Science Teaching." Six issues instead of four comprised Volume 16: October 1931, December 1931, February 1932, April 1932, October 1932, and December 1932. The reason for the expansion appears to have been synchronization of future volumes with the calendar year, instead of the school year. Volume 17 (1933) returned to four issues, published in February, April, October, and December.

Editorial Goals

With the ownership and publication now belonging to Science Education, Incorporated, the editorial staff felt it necessary to provide instructions to persons submitting articles for publication. Twelve "Suggestions to Authors of Articles for Science Education" were published on pages iv-v of Volume 16. This was the first time detailed author instructions appeared in the journal.

The editorial staff also deemed it important to inform readers of the intended goals and content of Volume 16 and successive volumes of Science Education. Thus, the first page of the sixteenth volume stated that the major aim of the journal was:

improvement of science teaching in elementary schools, secondary schools, institutions for the education and re-education of teachers, and colleges. To this end there will appear in Science Education (1) articles and reports dealing with science and with the philosophy and practice of science teaching in American and foreign schools and colleges, (2) abstracts of articles related to science and science education found in current periodicals, (3) abstracts and review of recent books and monographs in the fields of science and science teaching, and (4) news and announcements

concerning the activities of individuals and organizations working for the improvement of science instruction.²²

Editor Pieper also emphasized the desire to receive comments and criticisms on articles appearing in the journal. He hoped the journal would become an open forum to discuss the various problems of science teaching.

Early Writers

The writers of Volume 16 and other early volumes were largely NARST members. Frequent contributors included NARST charter members: Downing, Curtis, Caldwell, Palmer, Glenn, and Meister. Webb, in a presentation for the 25th Anniversary of NARST, recalled that

new names appeared above the articles--writers who in due time merited invitation to membership in NARST by virtue of their contributions to science education. The magazine became ever more specialized--an avenue for the publication of studies. Articles such as "How Paper Is Made" no longer appeared. Science Education had no appeal as a "popular" magazine--this, of course, was as the membership desired it. . . .

The increased number of library subscriptions to Science Education was . . . an indication of its valued service.²³

Policy Clarifications

As Science Education became more specialized, and the number of subscriptions and manuscripts increased, a concern arose among the members. The concern dealt with the potential overlap of leading science education journals. Consequently, a motion was passed at the Sixth Annual Meeting, February 26-28, 1933. The motion directed that the Executive Committee recommend to the Editorial Boards of Science Education and School Science and Mathematics a policy clarification.²⁴ It was hoped this refinement of the functions of each journal would reduce the overlap.

Affiliations

Issue 4 (April 1932), Volume 16 carried an inscription defining Science Education, not only as the official journal of NARST, but also of the National Council of Supervisors of Elementary Science (NCSES). In Washington, D.C., on the day (February 20, 1932) of its first joint meeting with NARST, the NCSES voted to request Science Education to become its official publication.²⁵ The request was granted.

CESI

The National Council of Supervisors of Elementary Science (NCSES), at the time of its founding in 1920, had been called the National Council of Supervisors of Nature Study and Gardening.²⁶ At some point, prior to its association with Science Education, the name had been changed to NCSES. While affiliated with Science Education, 1932-1964, NCSES underwent two additional name changes. In 1935 the group became known as the National Council on Elementary Science (NCES). In 1958 the name was changed to Council of Elementary Science International (CESI).²⁷

During the time that this group was known as NCES, it was responsible for editing of the third issue of both Volume 24 (1940) and Volume 25 (1941). They were in the process of doing the same for Volume 26 (1942), when the effects of the war caused the cancellation of both the March and April issues. Many of the articles that were to have been published in the spring were published in a special segment of the December issue.²⁸ This segment appears to have been the last NCES-edited material. The disruption caused by World War II, combined

with changes in the Editorial Committee, apparently ended the practice.

The group's first representative to the Editorial Board of Science Education was their incoming 1932-33 president, Lois Meier Shoemaker of the New Jersey State Teachers College at Trenton.²⁹ Prior to her marriage, Lois Meier had become the second female member of NARST. She was one of many NARST members who were elected to the presidency of NCSES. In fact, from 1930-1954 only two NCSES presidents were not members of NARST.³⁰ Both of the presidents not known to be members of NARST were women.

The addition of Lois Meier Shoemaker to the Editorial Board increased the total number of Board members to six. The other five members of the Board were:

Charles J. Pieper, Editor, New York University, New York
 Earl R. Glenn, Business Manager, State Teachers College,
 Montclair, New Jersey
 Clarence M. Pruitt, Associate Editor (In charge of abstracts and
 new publications), University of Alabama, University, Alabama
 Walter G. Whitman, Associate Editor (In charge of classroom
 helps), State Normal School, Salem, Massachusetts
 S. Ralph Powers, NARST representative³¹

SAMS

The third journal affiliation was announced in Volume 17:3 (October 1933). The Science Association of the Middle States (SAMS) selected Science Education to serve as its official organ.³² The individual designated to represent SAMS on the Editorial Board was W. L. Eikenberry, a founding member of NARST. Appearing in Volume 17 was an article by Eikenberry that related the history of SAMS.

The SAMS was affiliated with the journal from 1933 through 1953. For the last two years of its affiliation, the recording in the journal of the Association's name was inconsistent. Sometimes it was listed as the Science Association of the Middle States, and sometimes it was listed as the Association of Science Teachers of the Middle States. Nowhere, in any of these volumes, was there mention of a name change for this middle states group. Additionally, no mention was found as to what happened to the SAMS affiliation or to the group in general.

When NARST members were asked about SAMS, few had recollection of the group. One member suggested that the SAMS group was absorbed into the regional sections of the Association for the Education of Teachers in Science (AETS). The most frequent response, as to what happened, was that the group probably disbanded. Reasons given for this occurring were that several other teacher groups had evolved and NSTA was becoming very prominent. There was no longer the need for the organization.

AETS

The position on the masthead page, vacated at the end of 1953 by the Middle States Association, did not remain empty. Beginning with the first issue of 1954 (Volume 38:1), a new affiliation was listed, the Association for the Education of Teachers in Science (AETS).

AETS had formerly been known as the Conference on the Education of Teachers in Science. At their October 1953 meeting, just three months prior to the affiliation with Science Education, the Conference members had adopted the new name.³³ The first two words of their

name were changed from "Conference on" to "Association for." Thus, the name "Association for the Education of Teachers in Science" came into being.

Informal meetings of this group had occurred in the late 1920s, but the first formal meeting was October 1932.³⁴ When historical information on AETS was examined, no comments about the affiliation of AETS with Science Education were located. However, NARST member Willard Jacobson was the 1953 secretary-treasurer of AETS. He indicated, during a phone conversation, that AETS membership had significantly increased after World War II and that during the early 1950s the group was becoming more solidified.³⁵ Members were probably looking for an official publication. When Jacobson's outline of the history of AETS was examined, four of the five officers at the 1953 meeting were found to also be NARST members. This fact probably influenced the decision to affiliate with Science Education.

The AETS remained affiliated with Science Education, through 1961, Volume 45. This was the point at which NARST disassociated with Science Education. The AETS did likewise. In addition, AETS joined NARST in the launching of a new journal in 1963.

International Exchange

Articles pertaining to science education in foreign schools had previously appeared in Science Education. Many of these had been written by NARST members. However, a NARST goal, pursuing the international exchange of science education information, was not found prior to Volume 16:1 (October 1931). Since Science Education was the official organ of NARST, Volume 16 might be construed to contain the

first formal identification of such a goal. In Volume 16:1 the editors state their intent to include writings on science teaching in foreign schools and colleges.³⁶

Foreign Editors

As an attempt to further the goal of international exchange, the Editorial Board invited foreign science education leaders to join the staff of editors. In Volume 16:5 (October 1932), Editor Pieper introduced the three men, scientists and teachers, who had accepted the invitation. They were:

- Dr. Otakar Matousek, Professor of Earth Science in Education,
Charles University, Prague, Czechoslovakia
- Mr. F. W. Turner, M.A., M.Sc., M.R.S.T., Senior Science Master of
the Thames Valley County School, Twickenham, Middlesex,
England
- Dr. Karl von Hollander, Padagogische Akademie, Halle (Sasle)
Burgstrasse 44, Germany³⁷

These three foreign editors continued to be listed through Volume 20 (1936).

Foreign Subscriptions

Beyond the preceding evidence of NARST's international efforts, Volume 16 also quoted the first foreign subscription rates. These rates were established at \$2.00 for subscriptions and \$.50 for single issues. Domestic subscriptions remained \$1.50, with single issues still \$.40.

Subscriptions

For 33 years, 1929-1961, NARST was affiliated with Science Education. During this time the subscription rate, as printed on the masthead page or "Contents" page, was only increased four times.

Subscription costs were at a minimum because the journal was run "on a voluntary, nonprofit basis."³⁸

Larger Pages

However, when the page-size increased with the issuance of the 1934 volume, so did the cost of the journal. Thus, the first price raise occurred. Fifty cents was added to both domestic and foreign subscription rates. This meant domestic subscriptions were now \$2.00 and foreign subscriptions were now \$2.50.³⁹

Prior to this price increase, subscriptions for members had been \$.50 lower than posted subscription costs. The Association paid the \$1.00 subscription rate from the \$5.00 membership dues. However, with the raise NARST was now paying \$2.00 for each member's subscription, the same as the posted rate.

At the Seventh Annual Meeting (1934), this doubling of membership subscription rates definitely impacted discussion and decisions regarding NARST's excess treasury funds. The treasury balance at this annual meeting was \$388.27.⁴⁰ How much of this balance was felt to be surplus was not reported. The committee, considering the problem of surplus funds, made a list of member's suggestions for possible uses of the funds. These suggestions included: supporting an Association yearbook, funding activities working on science teaching problems, and increasing funds for Science Education. One person desired that the Association purchase more stock in Science Education, but another advised against it. Because the member subscription rate, which was paid from the NARST treasury, was increasing from \$1.00 to \$2.00, most members were opposed to increasing journal support.⁴¹

Larger Volumes

Up through Volume 20 (1936), the journal had been a quarterly publication run by the Editorial Board. With Volume 21 (1937), the Editorial Board became known as the Editorial Committee and the publication was expanded to five issues. This expansion led to the second \$.50 price increase for domestic subscriptions. However, the price increase for foreign subscriptions was \$1.00. These price changes became effective beginning with the second issue of Volume 21.⁴² From Volume 21 (1937) on through Volume 45 (1961), NARST's last issue, the price of foreign subscriptions continued to be \$1.00 higher than domestic rates.

The price change to \$2.50 was not felt by NARST members until Volume 22 (1938), when the journal again expanded. This time, two issues were added, thus producing the first seven-issue volume. Charter member Hanor Webb related that one of the new features which began with the expanded volume was the

[d]igests of unpublished studies in science education . . . , prepared by Curtis. No similar opportunity to keep up with progress in this field of teaching had been offered before, by any journal. It is a tribute to the activities of science educators that their studies were numerous.⁴³

At the Eleventh Annual Meeting (1938), the Association voted to keep their dues at \$5.00 per year. However, to help cover the costs of the expanded volume, they voted to increase to \$2.50 the dues portion paid to the journal.

The cost of the 1938 journal increased minimally because the advertisements were able to cover most the expansion.⁴⁴ In fact, the subscription rate remained the same for 11 years, at which time the

largest increase was experienced. The domestic rate increased from \$2.50 to \$4.00 beginning with Volume 33 (1949). The final increase occurred in 1957 with Volume 41. A subscription within the United States cost \$5.00.

In the minutes for the Thirty-second Annual Meeting (1959), secretary-treasurer and Science Education editor-owner, Clarence Pruitt moved that

Article II of the Constitution and By-Laws be changed to read as follows: "The dues of this Association shall be ten dollars a year, and of this amount eight dollars a year shall go to Science Education for payment of the member's annual subscription to the magazine."⁴⁵

This amendment passed with little dissent in February 1960. However, the subscription price, published on the "Contents" page of the journal, did not show an increase to \$8.00 until the 1967 volume. Questions arise from this observation. Was the \$5.00 subscription price, published during that time span, in error? Was there purposeful intent for NARST members to pay \$3.00 more than the regular subscription price? The Association did pay, in 1961, \$8.00 per subscription for dues-paying NARST members.

War Years

During the Depression years, 1929-1939, Science Education experienced expansion. As reported in the previous sections, each of the following increased: journal goals and content, professional affiliations, Editorial Board, circulation, international information exchange, advertisements, quantity of manuscripts, reports of science education research, page size, number of issues per volume, and subscription rates.

However, after the United States entered World War II, December 8, 1941, Science Education experienced significant changes and reductions. These were acutely felt by the Editorial Committee of 1942 as they tried to produce Volume 26. With some misgivings, they had planned to publish a seven-issue volume as they had been doing since 1938. The following excerpt from a letter to the subscribers explained what they faced.

Now for the first time in the history of the journal we are faced with the necessity of temporary curtailment of our plans. Four factors have prevented us from realizing our hopes. First, the number and quality of manuscripts submitted in these otherwise busy times have diminished. Second, there has been an increase in cost of materials and printing. Third, a decrease in our subscription list has resulted due to the demands of the armed services on our science teachers. And fourth, advertisements are more difficult to obtain in this critical period.⁴⁶

Accordingly, the Editorial Committee of 1942 adjusted to the circumstances by suspending publication in March and April. The October and November issues were combined, and the December issue was delayed. Those subscribers who had paid for seven issues were given extensions on their subscription period.⁴⁷

Whitman Returns

Five issues were planned for 1943. However, only four were able to be produced. The first two issues of this twenty-seventh volume were the final two issues published under the editorship of Charles J. Pieper. Pieper had dedicatedly served as editor since the first NARST issue in 1929. He relinquished the helm to its former owner, Walter G. Whitman, and a publications committee. This publications committee, chaired by Whitman, replaced the Editorial Committee. Its members included Florence G. Billig, Gerald S. Craig, Ellsworth S.

Obourn, S. Ralph Powers, and Clarence M. Pruitt, business manager.⁴⁸ Most of these individuals were part owners in Science Education, Incorporated.

Whitman, in his role as committee chairman, functioned as editor from November 1943-April 1944. This was the first time Whitman's name had appeared on the masthead page since 1936, the year of his retirement from 21 years of service on the Editorial Board.

One reason for trying this new committee form of governing the journal stemmed from membership concerns. Disagreements had sometimes arisen from the one-man policy and content decisions that Pieper had made as editor.⁴⁹ The lead editorial for Volume 28 (1944) related that Science Education was

reconsidering its editorial policies, with a view to serving teachers more effectively. . . . A meeting of the Board of Directors of Science Education, Incorporated, was called for this purpose, and as a result of the discussions a committee was appointed and charged with the responsibility of making the journal more serviceable to all science teachers and others concerned with science education.⁵⁰

In fulfillment of this charge, the Publications Committee planned to carry in the journal:

reports of recent advances in scientific research that are affecting our ways of living; descriptions of procedures in the classrooms of good teachers; suggestions for field trips, laboratory work, and the use of visual aids; and specimens of evaluation instruments. Articles on research in science education will continue to be published and the book review and abstracts of current periodical literature will, of course, be retained.⁵¹

The Committee solicited suggestions for improvement of the journal from the readers. One form of solicitation was a questionnaire that appeared in the April-May 1944 issue. Along with the questionnaire the Publications Committee included a tentative plan for the journal.

The plan called for seven departments: "Science Today," "Science in the Community," "Research in Science Teaching," "Significant Trends in Education in Relation to Science Teaching," "Teaching Reports and Suggestions," "The Science Teacher's Heritage," and "Review and Abstracts."⁵²

Each category they had previously listed for inclusion in the journal was embodied in one of these proposed departments and journal sections. However, three new categories had been added. "Science in the Community" would contain articles on community, state, and national projects. The section on educational trends would report and interpret the recommendations of pertinent policy-making bodies including various commissions, associations, and boards. The third newly proposed heading was "Science Teacher's Heritage." This section would include "articles on the history of science and of science teaching, biographies of great scientists and science teachers, and the like."⁵³ The questionnaire asked the readers' opinions of the tentative journal plan and the proposed seven departments. Ninety-four returns were received and tabulated. All but one department had met with approval of at least 88% of the respondents. The department pertaining to heritage received only 64% approval and, subsequently, was dropped from the Committee's proposed plan.⁵⁴

Powers Edits

The individual from the Publications Committee who eventually was appointed as official editor was S. Ralph Powers. His term of service covered the span of October 1944-December 1945.

During his term, attempts were made to implement the proposed plan of the Publications Committee. Names of the Committee no longer appeared on the title pages and neither did affiliation representatives. However, editors for three of the proposed departments had been added. Thus, the individuals responsible for Volume 29 (1945), included:

S. Ralph Powers, Editor
Teachers College, Columbia University, New York

Mervin E. Oakes, Advertising Business Manager
Queens College, Flushing, New York

Clarence M. Pruitt, Circulation Business Manager
College Station, Stillwater, Oklahoma

Elsa Marie Meder, Associate Editor
State Teachers College, Jersey City, New Jersey

R. Will Burnett, Educational Trends Dept. Editor
Stanford University, California

Francis D. Curtis, Research Dept. Editor
University of Michigan, Ann Arbor, Michigan

By Issue 4 (October 1945) the position of associate editor was gone and another department editor had been added:

John S. Richardson, Teaching Reports Dept. Editor
Miami University, Oxford, Ohio

World War II was still having a major impact on the journal being produced by these individuals. A quote from Hanor Webb about the journal of this time period recollected that

there was an interesting shift to cheap paper for the journal. Its yellow contrast to the white pages at the beginning of the volume [1945] is a reminder that one must sometimes do the best he can with what he has. . . .

Better days began to dawn for the Association in 1947. The magazine again used white paper.⁵⁵

Not only did the journal start using white paper again, but the size of the journal had returned to the five-issue volumes.

Other changes had also taken place. The journal was under new ownership and had a new editor. Both the committee and department format of governing the journal had proven difficult to implement, particularly when coupled with the effects of the war.⁵⁶ Additionally, long-distance cooperative work was inefficient and troublesome, especially when funds were not available for at least periodic group meetings. Financial strains and management difficulties contributed to Pruitt having the opportunity to become both editor and owner of Science Education in 1946. From this point, through the remainder of NARST's affiliation with the journal, the only name that appeared on the masthead page was Clarence M. Pruitt.

Clarence M. Pruitt

Clarence M. Pruitt was elected to NARST membership in 1929. In the same year, he became active in the publication of NARST's journal. However, as early as 1928, Pruitt had contributed articles to the January, March, and May issues of Science Education's predecessor The General Science Quarterly.

Associate Editor

The second issue of Science Education, November 1929, identified Pruitt as the associate editor for abstracts in the High School Chemistry Department. At this time Pruitt was located at the University of Alabama.

Pruitt's interest and involvement in the journal soon led to his appointment to the Editorial Board. In the April 1932 issue, he was listed as one of the six board members. His position was as the associate editor in charge of abstracts and new publications.

Business Manager

In the October issue of Volume 17 (1933), the announcement was made that Clarence M. Pruitt would now hold two positions, his previous associate editor position and his new position of business manager. This made Pruitt the third business manager of Science Education.

The position of business manager appeared first in Volume 16 (1931-32). It had been established by Science Education, Incorporated, after this group obtained the journal from founder Walter G. Whitman. Editorial Board member Earl R. Glenn assumed the business manager position for Volume 16. He was succeeded by Fred G. Anibal, Teachers College, Columbia University, New York. Anibal's appointment to a position at Leland Stanford University, Palo Alto, California, necessitated his resignation prior to the October 1933 issue. He consented to remain on the Editorial Board as the seventh member and serving as the Western Business Manager.⁵⁷ However, this position only lasted through the publication of Volume 20 (1936).

When Pruitt became business manager, he was on the staff of the School of Education of New York University. During this time, he pursued his doctorate at Columbia University.⁵⁸ Since the office for Science Education, Incorporated, and the office of the editor, Charles

J. Pieper, were in New York, Pruitt's new residence was felt to be an asset to the production of the journal.⁵⁹

Pruitt did not stay in New York long. By 1935 he was teaching at Colorado State College of Education, in Greeley.⁶⁰ The year 1937 found him teaching chemistry at Evansville College, Evansville, Indiana.⁶¹ In 1938, he joined the staff of Oklahoma A. and M. College, Stillwater, Oklahoma.⁶² Throughout these moves, he retained his dual responsibilities as associate editor and business manager until 1944. At this time, because of an organizational change in Science Education, he became circulation manager.

Editor

Shortly thereafter, in 1945, Pruitt accepted a position at the University of Illinois in Urbana.⁶³ This was his location when, in 1946, Powers resigned as editor of Science Education. Pruitt then accepted the appointment to become the fourth editor and thus joined the ranks of Whitman, Pieper, and Powers.

In recalling Pruitt's editorship at the Fiftieth Anniversary of NARST, Willard J. Jacobson wrote:

An entire generation of science educators came to recognize his bold, distinctive handwriting on envelopes which they knew carried the joyful news of acceptance of an article or occasionally the sad news of rejection. Most importantly, Clarence Pruitt had a sense of history, and we are indebted to him for much of what we know about the early days of NARST and some of its most distinguished members.⁶⁴

Owner

During this same year (1946), the membership of NARST approved a dramatic change in the ownership. By a vote of 40 to 2, they

agreed to the sale of all Science Education stock to Clarence M. Pruitt.⁶⁵

Pruitt, now owner and editor of Science Education, returned to Stillwater in 1947. In this year Pruitt received another NARST duty. He was elected secretary-treasurer, a position he would hold until 1960, a time span of 15 years.

Pruitt continued his mobile life by leaving Stillwater in 1951 to reside in Coral Gables, Florida, and teach at the University of Miami.⁶⁶ In 1952, he again returned to Stillwater. However, during the summer of 1954, he and his wife made their final move, a return to Florida. This time, however, they would reside on the Gulf coast. Pruitt had accepted a position at the University of Tampa.⁶⁷

Science Education Recognition Awards

While residing in Tampa, Pruitt started a new journal feature which he called the Science Education Recognition Awards. This feature included a picture of the awarded individual on the journal cover and a biographical sketch authored by Pruitt. The first of the awards appeared in 1956 in the third issue of Volume 40. It was presented to a charter member of NARST, Gerald S. Craig, who was a pioneer in science education for elementary school children.

Thereafter, the Science Education Recognition Awards were the cover feature for each issue of the magazine. Pruitt, who had established the awards, was also the person responsible for selecting the recipients.⁶⁸ The vast majority of individuals receiving the awards were NARST members. In all, 62 awards were presented. John M. Mason, the thirty-fourth president of NARST, received the final award

in the October 1968 issue of Volume 53. This was the final award presented because Pruitt died on August 13, 1968. Fittingly, the last picture ever to appear on an issue of Science Education was that of Clarence M. Pruitt. The accompanying eulogy was written by NARST member N. Eldred Bingham, the fifth editor of Science Education.

Summary Table

Table 2 summarizes Science Education during the 33 years of its affiliation with NARST. The data begins with NARST's first issue (May 1929) and culminates with NARST's last issue (December 1961). The first column records the year and volume numbers. Since the early issues corresponded to the school year instead of the calendar year, Volumes 13-16 span parts of two years. By examining the issues per volume in column two, the transition to coincide publication with the calendar year is easily seen. The number of issues expanded from four for Volume 15, to six for Volume 16, and returned to four for Volume 17. From Volume 17 through the remainder of Table 2, the publication year for a single volume coincides with the calendar year. Combining this information with that in column three discloses that the change in publication timing was the reason Volume 16 became the largest volume in Science Education's history.

Both columns two and three reflect the increases and decreases that occurred during the publication of Science Education. Especially noticeable are the reductions that occurred during World War II. Science Education dropped from seven issues in 1941 to four issues in 1942 and 1943. The 1943 publication of the journal (Volume 27), with

Table 2

Science Education During the Years of NARST Affiliation (1929-1961)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936) Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)		Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
1928-29 (13)	4 NARST's first issue-#4	292	Walter G. Whitman, Editor (Issues 1-3), Editorial Board Member (Issue 4)	Charles J. Pieper, Chairman (Issue 4) Earl R. Glenn (Issue 4), Editorial Board Member	NARST (Issue 4)	\$1.50	None
1929-30 (14)	4	386	Walter G. Whitman Earl R. Glenn	Charles J. Pieper, Chairman	NARST	1.50 (1.00)	None
1930-31 (15)	4	278	Walter G. Whitman Earl R. Glenn	Charles J. Pieper, Chairman	NARST	1.50 (1.00)	None
1931-32 (16)	6	527	Charles J. Pieper, Editor Earl R. Glenn, Bus. Mgr. S. Ralph Powers, NARST rep. Otakar Matousek, For. Ed. from Czechoslovakia (Issues 5 & 6) Karl von Hollander For. Ed. from Germany (Issues 5 & 6)	Clarence M. Pruitt, Assoc. Ed. of Abstracts and New Pubs. Walter G. Whitman, Assoc. Ed. of Classroom Helps Lois Meier Shoemaker, NCSES rep. F. W. Turner, For. Ed. from England (Issues 5 & 6)	NARST NCSES	1.50 (1.00)	\$2.00
1933 (17)	4	354	Charles J. Pieper, Editor Fred G. Anibal, Bus. Mgr. (Issues 1-2); Western Bus. Mgr. (Issues 3-4) S. Ralph Powers, NARST rep. Otakar Matousek, For. Ed. from Czechoslovakia Karl von Hollander, For. Ed. from Germany (Issues 5-6)	Walter G. Whitman, Associate Ed. of Classroom Helps Clarence M. Pruitt, Bus. Mgr. (Issues 3-4) Lois Meier Shoemaker, NCSES rep. W. L. Eikenberry, SAMS rep. (Issues 3-4) F. W. Turner, For. Ed. from England (Issues 5-6)	NARST NCSES SAMS (Iss. 3-4)	1.50 (1.00)	2.00

Table 2 (continued)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936) Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)		Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
1934 (18)	4	262	Charles J. Pieper, Editor S. Ralph Powers, NARST rep. W. L. Eikenberry, SAMS rep. Otaker Matousek, For. Ed. from Czechoslovakia Karl von Hollander, For. Ed. from Germany	Walter G. Whitman, Associate Ed. of Classroom Helps Clarence M. Pruitt, Bus. Mgr. Lois Meier Shoemaker, NCSES rep. F. W. Turner, For. Ed. from England	NARST NCSES SAMS	\$2.00 (2.00)	\$2.50
1935 (19)	4	200	Charles J. Pieper, Editor S. Ralph Powers, NARST rep. W. L. Eikenberry, SAMS rep. Otaker Matousek, For. Ed. from Czechoslovakia Karl von Hollander, For. Ed. from Germany	Walter G. Whitman, Associate Ed. of Classroom Helps Clarence M. Pruitt, Bus. Mgr. Lois Meier Shoemaker, NCSES rep. F. W. Turner, For. Ed. from England	NARST NCES SAMS	2.00 (2.00)	2.50
1936 (19)	4	236	Charles J. Pieper, Editor S. Ralph Powers, NARST rep. W. L. Eikenberry, SAMS rep. Otaker Matousek, For. Ed. from Czechoslovakia Karl von Hollander, For. Ed. from Germany	Walter G. Whitman, Associate Ed. of Classroom Help Clarence M. Pruitt, Bus. Mgr. Lois Meier Shoemaker, NCSES rep. F. W. Turner, For. Ed. from England	NARST NCES SAMS	2.50 (2.00)	3.50
1937 (21)	5	260	Charles J. Pieper, Editor S. Ralph Powers, NARST rep. W. L. Eikenberry, SAMS rep.	Clarence M. Pruitt, Bus. Mgr. Lois Meier Shoemaker, NCES rep.	NARST NCES SAMS	2.50 (2.50)	3.50

Table 2 (continued)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936) Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)		Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
1938 (22)	7	380	Charles J. Pieper, Editor Francis D. Curtis, Assistant Ed. Digests of Unpub. Investigations S. Ralph Powers, NARST rep.	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep. W. L. Eikenberry, SAMS rep.	NARST NCES SAMS	\$2.50 (2.50)	\$3.50
1939 (23)	7	398	Charles J. Pieper, Editor Francis D. Curtis, Assistant Ed. Digests of Unpub. Investigations S. Ralph Powers, NARST rep.	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep. W. L. Eikenberry, SAMS rep.	NARST NCES SAMS	2.50 (2.50)	3.50
1940 (24)	7	414	Charles J. Pieper, Editor Ellsworth S. Obourn, NARST rep. W. L. Eikenberry, SAMS rep.	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep.	NARST NCES SAMS	2.50 (2.50)	3.50
1941 (25)	7	412	Charles J. Pieper, Editor Ellsworth S. Obourn, NARST rep. W. L. Eikenberry, SAMS rep.	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep.	NARST NCES SAMS	2.50 (2.50)	3.50
1942 (26)	5 intended 4 actual	220	Charles J. Pieper, Editor Ellsworth S. Obourn, NARST rep. W. L. Eikenberry, SAMS rep.	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep.	NARST NCES SAMS	2.50 (2.50)	3.50

Table 2 (continued)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936) Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)		Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
1943 (27)	4	156	Charles J. Pieper, Editor (Issues 1-2) Walter G. Whitman, Chairman (Issues 3-4) Ellsworth S. Obourn, Com. Member & NARST rep. S. Ralph Powers	Clarence M. Pruitt, Bus. Mgr. & Assistant Ed. of Abstracts & New Publications Lois Meier Shoemaker, NCES rep. W. L. Eikenberry, SAMS rep. Florence G. Billig Gerald S. Craig	NARST NCES SAMS	\$2.50 (2.50)	\$3.50
1944 (28)	5	298	Walter G. Whitman, Chairman S. Ralph Powers, Ed. (Issues 4-5), Committee Member (Issues 1-3) Elsa Marie Meder, Associate Editor (Issues 4-5) Ellsworth S. Obourn, Committee Member & NARST rep. (Issues 1-3) W. L. Eikenberry, SAMS rep. (Issues 1-3)	Clarence M. Pruitt, Bus. Mgr. (Issues 1-3), Circulation Mgr. (Issues 4-5) Mervin E. Oakes, Adv. Mgr. (Issues 4-5) Lois Meier Shoemaker, NCES rep. (Issues 1-3) Florence G. Billig Gerald S. Craig	NARST NCES SAMS	2.50 (2.50)	3.50
1945 (29)	5	282	S. Ralph Powers, Ed. Elsa Marie Meder, Associate Ed. (Issues 1-3) R. Will Burnett, Educational Trends Dept. Ed.	Clarence M. Pruitt, Circulation & Business Manager Mervin E. Oakes, Adv. Business Francis D. Curtis, Res. Dept. Ed. John S. Richardson, Teaching Reports Dept. Ed. (Issues 4-5)	NARST NCES SAMS	2.50 (2.50)	3.50
1946 (30)	5	324	Clarence M. Pruitt, Editor		NARST, NCES, SAMS	2.50 (2.50)	3.50
1947 (31)	5	344	Clarence M. Pruitt, Editor		NARST, NCES, SAMS	2.50	3.50

Table 2 (continued)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936)	Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
			Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)			
1948 (32)	5	384	Clarence M. Pruitt, Editor	NARST, NCES, SAMS	\$2.50 (2.50)	\$3.50
1949 (33)	5	380	Clarence M. Pruitt, Editor	NARST, NCES, SAMS	4.00 (2.50)	5.00
1950 (34)	5	380	Clarence M. Pruitt, Editor	NARST, NCES, SAMS	4.00 (2.50)	5.00
1951 (35)	5	302	Clarence M. Pruitt, Editor	NARST, NCES, SAMS	4.00 (2.50)	5.00
1952 (36)	5	319	Clarence M. Pruitt, Editor	NARST, NCES, SAMS	4.00 (2.50)	5.00
1953 (37)	5	350	Clarence M. Pruitt, Editor	NARST, NCES, SAMS (Issues 1-4)	4.00 (5.00)	5.00
1954 (38)	5	438	Clarence M. Pruitt, Editor	NARST, NCES, AETS	5.00 (5.00)	6.00
1955 (39)	5	410	Clarence M. Pruitt, Editor	NARST, NCES, AETS	5.00 (5.00)	6.00
1956 (40)	5	406	Clarence M. Pruitt, Editor	NARST, NCES, AETS	5.00 (5.00)	6.00
1957 (41)	5	444	Clarence M. Pruitt, Editor	NARST, NCES, AETS	5.00 (5.00)	6.00

Table 2 (continued)

Year and volume	Issues per volume	Pages per volume	Editorial Board (1929-1936)	Affiliates ^a	Posted & member subscrip. cost	Posted foreign subscrip. cost
			Editorial Committee (1937-1943) Publications Committee (Oct. 1943-1945) Editor only (1946-1961)			
1958 (42)	5	474	Clarence M. Pruitt, Editor	NARST, AETS, NCES (Issues 1-3) becomes CESI (Issues 4-5)	\$5.00 (5.00)	\$6.00
1959 (43)	5	464	Clarence M. Pruitt, Editor	NARST, CESI, AETS	5.00 (8.00)	6.00
1960 (44)	5	414	Clarence M. Pruitt, Editor	NARST, CESI, AETS	5.00 (8.00)	6.00
1961 (45)	5	478	Clarence M. Pruitt, Editor	NARST, CESI, AETS	5.00 (8.00)	6.00

^aKey to acronyms of affiliates:

AETS - Association for the Education of Teachers in Science

CESI:

NCSES - National Council of Supervisors of Elementary Science
(first name of CESI during time of affiliation)NCES - National Council on Elementary Science
(second name of CESI during time of affiliation)CESI - Council of Elementary Science International
(final name of CESI during time of affiliation)

NARST - National Association for Research in Science Teaching

SAMS - Science Association of the Middle States

only 156 pages, was the smallest volume of Science Education. No other volume dropped below 200 pages.

The middle column of Table 2 summarizes the leadership and changes in leadership that occurred. An editorial board managed the journal during its early years (1929-1936) of NARST affiliation. During this time Science Education, Incorporated, assumed the ownership of the magazine from its founder, Walter G. Whitman. Volume 16 was the first volume for which Science Education, Incorporated, was responsible. As the names and leadership positions are examined for Volume 16, the additions of a business manager, a NARST representative, assistant editors, and foreign editors becomes apparent.

The editorial board evolved into an editorial committee in 1937. No longer were there associate and foreign editors. However, assistant editorships were established in 1938. The changes in these assistant editorships and other positions are apparent when the table is scanned. The editorial committee remained in charge of the journal from 1937-1943. In 1943 the effects of World War II were partially responsible for changes in editorship and the advent of a publications committee. This committee functioned from October 1943-December 1945. As shown in the table, Clarence M. Pruitt assumed the editorship and ownership in 1946 and maintained these roles throughout the remainder of NARST's affiliation with Science Education.

Science Education served as the official journal of four different organizations--NARST, CESI, SAMS, and AETS. The time frame of these affiliations is presented in the column titled "Affiliates." Interesting to note is the name changes that occurred for CESI during

its association with the journal. These changes are summarized in the key that appears at the end of the table.

The final columns summarize the subscription costs of Science Education, both foreign and domestic. In Volume 16 the first posting of foreign subscription rates occurred. This is noteworthy because it coincided with the editorial board's goal to increase international information exchange and the board's appointment of foreign editors. Throughout Science Education's affiliation with NARST, the incremental cost of a foreign subscriptions over a domestic subscription remained stable and relatively small. As for the domestic rates, they experienced an increase of only \$3.50 during the 33 years accounted for in Table 2. However, a motion passed at the 1960 Annual Meeting of NARST, and enacted in 1961, established the subscription rate for members at \$8.00. Discussion of the discrepancy of posted rates (\$5.00) versus member rates (\$8.00) was presented earlier in this chapter.

NOTES

¹Walter G. Whitman, "Science Education," Science Education 13 (May 1929): 195.

²Ibid.

³Ibid., 196.

⁴Ibid.

⁵Ibid.

⁶Ibid.

⁷Obourn, "'Sine Qua Non,'" 13.

⁸Ibid.

⁹Ibid.

¹⁰NARST, Minutes Second Annual Meeting (1929), 281-83.

¹¹Ibid., 284.

¹²Obourn, "'Sine Qua Non,'" 13-14.

¹³Ibid., 285.

¹⁴Charles J. Pieper, Earl R. Glenn, and Walter G. Whitman, eds., "Science Education Enlarges Its Editorial Staff," Science Education 14 (November 1929): 295-97.

¹⁵Ibid., 296.

¹⁶Obourn, "'Sine Qua Non,'" 14.

¹⁷NARST, Minutes Third Annual Meeting (1930), 557.

¹⁸NARST, Minutes Fourth Annual Meeting (1931), 269.

¹⁹Ibid.

²⁰Clarence M. Pruitt, "General Science Quarterly--Science Education," Science Education 37 (February 1953): 10-11.

²¹"Editorial Notes and Comments," Science Education 16 (April 1932): 265.

²²Charles J. Pieper, "The New Science Education," Science Education 16 (October 1931): 1.

²³Webb, "Growth and Activities," 14.

²⁴Eikenberry and Obourn, "Fifteen Years," 255.

²⁵"Science Education Adopted as the Official Organ of The National Council of Supervisors of Elementary Science," Science Education 16 (April 1932): 263.

²⁶Pruitt, "CESI History," 312.

²⁷Ibid., 312-13.

²⁸"Editor's Note," Science Education 26 (December 1942): 210.

²⁹"Science Education Adopted," 263.

³⁰Pruitt, "CESI History," 314.

³¹Science Education 16 (April 1932): Title page.

³²"Changes on the Editorial Board," Science Education 17 (October 1933): 175.

³³Willard J. Jacobson, "AETS: An Outline of the History of the Association for the Education of Teachers in Science," Paper prepared for the Meeting of the Association for the Education of Teachers in Science, Cincinnati, Ohio, 25 March 1977, p. 15.

³⁴Ibid., 2-3.

³⁵Willard J. Jacobson, telephone interview by author, August 1990.

³⁶Pieper, "The New Science Education," 1.

³⁷Charles J. Pieper, "Foreign Editors of Science Education," Science Education 16 (October 1932): 353-54.

³⁸"To Our Subscribers," Science Education 26 (October-November 1942): 157.

³⁹Charles J. Pieper, ed., Science Education 20 (April 1936): Title page.

⁴⁰NARST, Minutes Seventh Annual Meeting (1934), 131.

⁴¹Ibid.

⁴²Charles J. Pieper, "Announcement," Science Education 21 (April 1937): 125.

⁴³Webb, "Growth and Activities," 14-15.

⁴⁴Webb, "Growth and Activities," 13.

⁴⁵NARST, Minutes of the Thirty-second Annual Meeting, 20 February 1959, Science Education 44 (February 1960): 15.

⁴⁶"To Our Subscribers," Science Education 26 (October-November 1942): 157.

⁴⁷Ibid.

⁴⁸Science Education 27 (December 1943): Title page.

⁴⁹"Conference Report of the Executive Committee of the National Association for Research in Science Teaching," 24 June 1961, Washington, D.C. Edited transcription (for readability) from a secondary tape, NARST Archives.

⁵⁰Florence G. Billig et al., "Editorial," Science Education 28 (February 1944): 9.

⁵¹Ibid.

⁵²"Science Education: What Shall It Be?" Science Education 28 (April-May 1944): 174-76.

⁵³Ibid., 176.

⁵⁴Elsa Marie Meder, "Report on the Questionnaire," Science Education 28 (December 1944): 289-90.

⁵⁵Webb, "Growth and Activities," 15.

⁵⁶NARST, Minutes of the Thirty-third Annual Meeting, 12 February 1960, Science Education 44 (April 1960): 231-35.

⁵⁷"Changes on the Editorial Board," 175.

⁵⁸N. Eldred Bingham, "Clarence M. Pruitt," Science Education 52 (December 1968): 419.

⁵⁹Ibid.

⁶⁰Bingham, "Pruitt," 419.

⁶¹Ibid.

⁶²Ibid.

⁶³Ibid.

⁶⁴Jacobson, "First Meeting," 11.

⁶⁵Bingham, "Pruitt," 420.

⁶⁶Ibid., 419.

⁶⁷Ibid.

⁶⁸Milton O. Pella, letter to Clarence H. Boeck, 13 January 1961, NARST Archives.

Chapter VI

TRANSITION

Science Education served as NARST's official journal for 33 years. In the words of editor-owner Clarence M. Pruitt, these "were years of great significance in the advance of science teaching and research."¹ The last three to five years of NARST's relationship with the journal, however, were marred by dissatisfaction among NARST members, an overwhelming workload for the journal's editor-owner, and his rejection of proposed solutions to the problems and concerns encountered. The ultimate results of these frustrations were the severance of the NARST-Science Education relationship and the birth of the Journal of Research in Science Teaching (JRST). The account of events precipitating the above actions follows in this chapter.

Thirty-third Annual Meeting (1960)

The first evidence that problems were arising with the NARST-Science Education relationship was found in NARST minutes published in the April 1960 issue of Science Education. The NARST-Science Education relationship was a sensitive topic for the Secretary-Treasurer Pruitt to record, since he was the editor and owner of Science Education. He had been actively involved with the journal since its affiliation with NARST in 1929, and had been its editor-owner since 1946.

Pruitt's first documentation of problems with the NARST-Science Education relationship appeared in the last paragraph of the

February 10, Executive Board Minutes. He wrote that there had been considerable discussion about the relationship. He stated that some members felt an urgent need to define the future relationship of the two. The last sentence alleged that "some N.A.R.S.T. members would like for N.A.R.S.T. to assume immediate Editorial control of Science Education."²

At the February 11, 1960, Executive Board meeting, issues pertaining to Science Education again surfaced. The minutes reported that NARST President Vaden W. Miles had forwarded to the journal editor-owner, Clarence M. Pruitt, a NARST member's suggestion. The suggestion was that published articles in Science Education be dated as to time received. When the Executive Board discussed the suggestion, most members felt the idea had merit. However, Pruitt recorded his strong opposition.

The letter, dated October 7, 1959, from which the proposed idea had been taken, was discovered in the NARST archival files. The reason for the proposal was that the writer had seen articles published ahead of his, even though he had submitted his papers much earlier.³

Another journal-related topic discussed was the appointment of an editorial board to screen all NARST papers before publication. This idea was also discovered in the previously mentioned October letter. In the discussion of this idea, Pruitt stated that such Boards had not functioned in the past and, consequently, had been abandoned. However, the motion to institute such a Board was passed.⁴

An additional motion, originated by Ellsworth S. Obourn, also passed. In this motion, Obourn moved that out-going president, Vaden W. Miles, chair a committee to resolve publication problems relating to Science Education.

No evidence of the publication problems alluded to in the Executive Board meetings of February 10 and 11, 1960, were found in the February 12, 1960, minutes of the general business meeting. In fact, the Publications Committee announced the decision to publish in Science Education all NARST papers presented at the 1961 Annual Meeting. However, all papers submitted for publication would be edited and approved by Kenneth E. Anderson and his committee. Anderson had been authorized to mimeograph the presented NARST papers for a three-year trial beginning in 1961. Incoming-president, Clarence H. Boeck was appointed to help with this task.⁵

"For the Record"

Pruitt was probably filled with a variety of emotions as he recorded these minutes of the 1960 meetings. Not only was he sensitive about the NARST-Science Education issues, but these minutes were the last he would write as NARST's secretary. For 14 years he had served as secretary-treasurer and he was reluctant to relinquish the position. However, members of the Executive Board had indicated that having a NARST spokesman "on the Washington scene" was desirable.⁶ Consequently, the 1961 slate of officers proposed a Washington, D.C. resident, Herman R. Branson, for the office of secretary. Branson was the first black to be nominated for a NARST officer position.

Insight into Pruitt's feelings and thoughts, as he dealt with the loss of his position as secretary-treasurer and the publication problems involving Science Education, were provided by Pruitt's follow-up article, "For the Record." The article, as were the minutes, was published in the April 1960 issue of Science Education.

In this article, Pruitt shared how in 1946 he had reluctantly assumed the secretary position while trying out his "wings for the first time as Editor of Science Education."⁷ He added that "[i]t had been pointed out that the position as Secretary-Treasurer would be of value in the new work as Editor."⁸ Through the years he had felt that the two positions had been mutually beneficial but indicated that some members now seemed to doubt the benefit.

Pruitt affirmed the friends he had made and the fine cooperation of NARST members. In mentioning the members he carried who were in arrears on dues, he acknowledged that "it always gave me greater pleasure to reclaim one of you 'lost sheep' than to add a new member."⁹ He attested to the competence of each president under which he had served and suggested that this was "the reason the organization could get along with a very average, self-effacing Secretary-Treasurer."¹⁰

Next he enumerated meeting highlights he had experienced:

the decision to admit Negroes to membership . . . [t]he Silver Anniversary meeting . . . [t]he ovation given Mr. NARST, Professor S. Ralph Powers, at the 1959 Atlantic City meeting . . . [t]he genial atmosphere created by the presence of Dr. Hanor A. Webb . . . [t]he high level discussions of the earlier years . . . [t]he joint meetings with CESI . . . [and] the luncheon February 22, 1958 honoring the writer [Pruitt] for '30 years of Meritorious Service' to NARST.¹¹

He also recollected his greatest disappointment as secretary-treasurer. This "was the failure to bring about the re-publication of the Curtis Digests as an Association project."¹²

Pruitt conceded that he had not always agreed with some members of the Executive Board. One of the most recent points of disagreement had been the selection of new members. He, as a supporter of a more liberal policy, emphasized that nearly two-thirds of the 1960 member-sponsored candidates had been rejected.¹³ He also interposed a second source of disagreement. This item dealt with the potential for officer material within the member ranks. He contended that dozens of members were well-qualified, but that some members felt only "a dozen more or less--have presidential possibilities."¹⁴

The next topic in his article pertained to the position of secretary-treasurer. He indicated that some members felt strongly that NARST had been "seriously handicapped in recent years by not having a Secretary-Treasurer in Washington."¹⁵ He wished luck to the committee members in Washington "panning for gold,"¹⁶ but also expressed an opposing viewpoint.

[T]his utter dependence on Washington for financial assistance and in other ways, is to be deplored rather than condoned. We feel that where the money comes from is bound to color and to determine, to a large extent, intangibly if not directly, the nature of the research as well as educational activities and implementation of the same. Too little consideration is being given to creeping federalism and its implications for American education, its control, and freedoms. So N.A.R.S.T. has succumbed in a large measure to this seemingly irresistible pressure.¹⁷

Pruitt alleged that he was not consulted about the change in the office of secretary-treasurer and in moving the office to Washington until after the decisions had been made. He continued by saying that

he did not use the office of secretary-treasurer to flaunt himself or for personal advancement. Twice he had turned down the presidency because he felt he could best serve NARST and Science Education as secretary-treasurer. He contended that he did not make opposition to the decision at the business meeting because the time was too short to effectively organize to contest it. More importantly he did not desire to divide the Association.¹⁸

As for the concluding paragraphs of Pruitt's article, they dealt with Science Education. He emphasized the high standards set by the first editor, Charles J. Pieper. He stated that the magazine was a service publication. The journal was "not now serving as a medium to promote any specific philosophy of education or of science education, nor to promote the policies of any educational institution, organization, group, or individual."¹⁹ He hoped it never would.

He agreed that many others could do a better job of editing. Additionally, he wrote that "[s]ome object to the content of the articles themselves, the editing of the same, to the policy of Science Education Recognition Awards, and others just object in general."²⁰

The awards policy alluded to was that since the time of Pruitt's origination of the awards in 1956, he solely had been responsible for selecting the recipients. Pruitt's statement about the objections to this policy and journal's content was followed by two poems depicting editors as unappreciated individuals.

He continued his comments about Science Education by stating that some members of NARST would like the Association to immediately take over complete control of the journal. To this he responded, that it

had always been his intent that at the time of his retirement, the ownership of Science Education would be assumed jointly by NARST and CESI.

At the end of his article, Pruitt requested responses and comments from the membership. His closing sentence was "Remember what we have said is only one side of the record!"²¹

Other Side of the Record

The officers of NARST recognized the effort, countless hours of service, and dedication of Clarence M. Pruitt. The 1961 president, Boeck, and the 1962 president, Smith, in discussions with the author, recalled how Pruitt had befriended them and encouraged them when they were just getting started in their careers. Thus, the decisions to elect a new secretary-treasurer and to attempt to obtain editorial control of Science Education had not been made without considerable thought, discussion, and soul-searching. There was no intent to offend or hurt this long-time member of NARST. However, several members firmly believed some changes were in order.

In an effort to recognize the contributions of Pruitt, he was elected to the office of Honorary President in 1960 and was listed as such in the 1961 Annual Meeting program. Pruitt was the only individual in NARST history found to have been bestowed with this honor. Additionally, the decision to elect a new secretary-treasurer had prompted the idea to recognize each of the three individuals who had held this office. Special citations were developed for

presentation at the Thirty-fourth Annual Meeting (1961) in Chicago.

The second and third sentences of Pruitt's citation read:

Clarence Martin Pruitt has in his modest, quiet manner markedly advanced the cause of science teaching, teacher education, and research in science education with his unique abilities and relentless effort since he first stepped into the classroom of a rural school in his native Hoosierland in 1915. His sincere human qualities and dedication to science education have won the respect and admiration of all of us.²²

Pruitt did not attend the Chicago meeting to receive this citation.

At the same annual meeting at which the citation was presented, members extensively discussed what the future actions concerning Science Education should be. Herbert A. Smith wrote in an August 3, 1991, letter to NARST archivist, Paul H. Joslin:

During the 34th Annual Meeting, a frustrated Clarence Boeck made a detailed report on the efforts of the preceding two years to reach some kind of a compromise with Dr. Pruitt. He had come to the conclusion that a compromise was impossible. Since I was the incoming president, I asked for the floor and put the question to a vote: Did the membership want a solution or dissolution of the association if nothing could be worked out?

The members decided that NARST's Executive Committee should undertake negotiations with Science Education Editor-Owner Pruitt. The goal would be "to achieve some mutually agreeable modus operandi for the journal."²³ If the negotiations failed, the ties with Science Education were to be broken and the possibility of a new official journal explored.²⁴

As stated in Smith's letter, this was not the first time members of the Executive Committee had tried to reach a compromise with Pruitt. However, it was to be the culminating effort after two years

of attempts. The previous two NARST presidents, Clarence H. Boeck and Vaden W. Miles, had

worked with Dr. Pruitt to try to get him to relinquish some of his editorial and policy-making prerogatives, and to transfer these to a committee of the Association. Further, they have tried to get him to make an assignment, a legal assignment of NARST [Science Education], to the Association so that in the event of his untimely death, the Association would be protected and would have the journal for itself. On both of these counts, they failed to get any satisfaction.²⁵

The meeting of Boeck, Miles, and Pruitt to which much of this quote probably refers, occurred on February 12-13, 1960.²⁶ At this meeting Pruitt indicated that he was planning to retire at age 70, which was yet another eight years into the future. Pruitt agreed to seriously consider writing a \$1.00 legalized option for NARST to buy Science Education when it became available; but before pursuing the option, Pruitt suggested NARST incorporate.²⁷ Both he and Mrs. Pruitt stated their intent to assign title to NARST, and possibly CESI, with NARST assuming the lead in a joint governing board.

When the price of the journal was discussed, Pruitt indicated that the value of the back issues was approximately \$5,000. He estimated the total sale value of Science Education to NARST to be \$10,000 and for others up to \$50,000.²⁸

Pruitt was the sole stockholder in Science Education, Incorporated, which had its incorporation address in New York, New York. A \$25 corporation tax was annually paid in New York. Since such a corporation was to have three officers, Miles asked Pruitt the names and titles of these officers. Pruitt responded that he was secretary-treasurer and that his wife was an officer. He stated that he would send the name of the third officer to Miles.²⁹

As stated previously, the negotiation attempts that provided the preceding information had failed. However, the NARST membership recognized the long and important history of the Science Education-NARST relationship. This history, coupled with respect for Pruitt and his past service to NARST, led the members present at the 1961 Annual Meeting, to mandate one final negotiation attempt. Because of his diplomacy and past leadership roles in NARST, J. Darrell Barnard was asked to carry out the mandate. He accepted.

His first contact with Pruitt was a letter dated April 10, 1961. The letter requested that Pruitt select a convenient time to meet with Barnard, prior to June 1, 1961. Barnard would then travel to Florida to discuss in person a mutually satisfactory solution to the NARST-Science Education problem.³⁰ Pruitt did not respond to Barnard's letter.

When no response was received by Barnard, the decision was made to contact Pruitt by telephone. In a letter addressed June 1, 1961, to President Smith, Barnard summarized the conversation with Pruitt.³¹ Pruitt had not responded to the letter because he felt such a meeting would be fruitless. He had no intention of changing his position about the control of Science Education from that presented in his April 1960 article, "For the Record." Pruitt felt that the dissatisfaction with Science Education was not an attitude shared by the majority of the membership. He was very much opposed to NARST assuming editorial and policy control for the journal. Selling the journal to NARST was found not to be a feasible alternative. Pruitt

expressed regrets at the probability that NARST would sever relations with the journal.

Turning over control of the journal, prior to his retirement, was obviously an option to which Pruitt was vehemently opposed. Certainly the journal was an integral part of his life. He had been affiliated with it for over 30 years and, as Barnard had stated in his letter to Pruitt, had "struggled through difficult times to preserve this fine journal."³²

Throughout most of the time Pruitt had been affiliated with the journal, the precedent had been for the editor to independently make all major decisions in regard to the journal. When the committee and department format of running the journal had been tried, it failed. Part of this failure was that committee work was difficult to accomplish by mail. Additionally, money was not available for assembling these early editorial committees. Thus, the accessibility to committee members and costs of transportation during early years definitely impeded the success of a committee. The establishment of editor-run journal operations evolved out of convenience and necessity. The editors that had preceded Pruitt, particularly Pieper with his 14 years of service, had also drawn criticisms for some of their one-man decisions.³³

However, in the more than 30 years of Science Education publication, the fields of science education and science education research greatly expanded. Researchers and institutions involved in research projects significantly increased. Evidence of the tremendous growth can be obtained by examining the membership demographics tables

in Chapter VII. Just in the 14 years since Pruitt became editor-owner in 1946, the number of states represented by the membership had expanded by 54%. The number of NARST members had grown more than 300%, and the number of these individuals affiliated with universities and colleges also had increased well over 300%. When the growth in science education and NARST is considered for the time period encompassing Pruitt's editorship and ownership of Science Education, the significance in Herman R. Branson's words is amplified. Branson, NARST's secretary-treasurer (1961-1962), made this comment in a discussion about the exorbitant amount of time required to organize, edit, and manage a journal publication. "I sympathize entirely with Pruitt, and if he has to prepare these things in longhand as he does, I don't see how he gets it done. It's just impossible."³⁴

The fact that Pruitt was running a one-man operation, especially during this time of growth, provides insight into many of the situations that developed. Leaders of NARST received complaints about the journal, especially during the late 1950s and first two years of the 1960s. Many complaints pertained to "delays in handling business matters, in handling manuscripts, etc., and . . . some of the issues of the periodical hav[ing] been several months late."³⁵

The following example of such a complaint is quoted from a letter to Pruitt, dated January 4, 1961. "I have written several (unanswered) letters of inquiry and well over a year has elapsed since you accepted my article . . . for publication in Science Education."³⁶

A complaint that NARST officers deemed quite serious originated from a long-time advertiser in the journal. The following quotes, taken from a letter dated May 12, 1961, were written by the Welch Scientific Company auditing department.

[D]uring the past years, we have not received any invoices for ads inserted [in Science Education]. No yearly rates or rate cards have been sent to us and we do not know what should be paid without proper bills. . . .

A few months ago, in desperation at not receiving replies to our letters regarding this matter, we ceased sending advertising copy to the publication. To our utter amazement our ad appeared in the form of an old insertion. . . . This we cannot countenance, due to the fact that descriptions, prices, etc., change. We cannot permit anyone to assume the responsibility of inserting this or that standing copy.³⁷

Unattended business and delays, such as those described by the preceding quotes, were not the only problems. Content, editing, and format had also become strong concerns. An illustration of these concerns was found in a letter dated January 25, 1961. The writer, a Catholic sister from Nova Scotia, contested:

Why, in the name of common sense, must we as science educators, find in our official journal page after page devoted to the reprinting of high school children's attempts at oratory on democracy? And then more pages on Washington and Lincoln. . . . And the format is equally disgraceful. When the thing sits on the shelf near the AERA publications, and the Science Teacher, and the Journal of Chemical Ed., it looks like a freak out of the Ark.³⁸

The following are earlier examples of content criticisms received by NARST leadership. This comment, from a letter dated October 7, 1959, was actually a quotation from a December 1958 letter.

I have been quite unhappy about some of the so-called papers that have appeared in Science Education and are supposed to deal with "research" in science education.³⁹

The physics professor, who wrote the October letter, continued his content remarks:

The April 1959 issue has a book review of the Fourth of July Story and of Baseball for Young Champions. Although I am just as patriotic and sports-minded as most people, I do not believe that review of such books should be done in a science journal. At other times there have been reviews of a highly emotional nature of religious publications. Again I have the greatest sympathy for religious expression but not on pages of a scientific publication.⁴⁰

As for content editing, one prominent NARST member, in a letter dated January 22, 1960, made the following comment. "[M]any of the papers are published apparently with little or no editorial appraisal or cleaning up."⁴¹

Pruitt and his wife contended that they had not received many complaints about the journal. A partial explanation for this may have been the fact that readers assumed, since NARST's name appeared on the masthead, that the journal was under NARST control. Consequently, much of the dissatisfaction correspondence had been sent to NARST presidents.

This assumption, that NARST had control of the journal, was seemingly one of the most disturbing concerns of the Executive Committee. They did not want advertisers and readers assuming NARST was responsible for content, editing, format, or business delays in publication of the journal. Thus, many of the discussions and decisions by the leadership and general membership began to focus on one primary principle. This was "that the control of an official organ ought to be vested in the Association rather than in any single individual."⁴²

Washington Conference

On June 24, 1961, with the preceding principle and contents of Barnard's summary letter in mind, President Smith convened the NARST Executive Committee in Washington, D.C. This location was selected because three members of the Committee resided in Washington. Members present were: Herbert A. Smith, Cyrus W. Barnes, Paul DeHart Hurd, Paul E. Blackwood, Herman R. Branson, and Ellsworth S. Obourn.⁴³ Obourn, a Specialist for Science in the Department of Health, Education, and Welfare, had reserved for the meeting a conference room at the U.S. Office of Education.

The two-fold purpose of the meeting was to decide whether or not to sever the ties with Science Education; and, if they did, what future course of action should NARST pursue. A 137-page report of this conference was transcribed from a secondary tape recording made from the original meeting tapes. A copy of this transcription is in the NARST Archives at Drake University, Des Moines, Iowa.

In recollecting the circumstances that led to and the decisions made at this Washington meeting, Smith wrote in his August 3, 1991, letter to NARST Archivist Joslin:

I really regretted that such an impasse [with Pruitt] had been reached. I felt I was left with no options but to push through the separation but I felt no personal satisfaction in seeing it accomplished.

It still puzzles me that Dr. Pruitt was so adamant in his position. Certainly a lot of people of good will tried valiantly to work out the perceived problems. I know that for him, Science Education was a "cause" and he devoted a considerable portion of his life to it. I'm sure the severance was a real tragedy to him. I can only believe that he did not believe it would really occur.

The preceding comments increase the understanding of the difficulty of Smith's task to inform Pruitt of the decision to sever

ties with the journal. The following excerpts from President Smith's June 26, 1961, letter to Pruitt (Appendix C.1.) summarize the official actions ultimately taken.

It was their [Executive Committee] unanimous decision to sever the relationship between the NARST and Science Education effective at the end of the Annual Business Meeting in February, 1962. Payment of the agreed upon \$8 per dues-paying member for the Journal will terminate upon payment of this sum for the year 1961. We request that any reference to NARST be removed from the masthead of Science Education following the last issue of the Journal in the calendar year 1961.

The Executive Committee did not reach this decision arbitrarily or capriciously, and have taken this step only after all reasonable alternatives seem to have been exhausted. In view of a mandate from the general membership at the last annual meeting on February 23, 1961, that a satisfactory resolution of the problems involved be reached, or that the existing relationship between NARST and Science Education be dissolved; and further, in view of the summary of the discussion which you had with Dr. Barnard, who was acting for and in the name of NARST, the Executive Committee believed that it had no recourse but to take this action.⁴⁴

Pruitt included this letter in his December 1961 Science Education article, "In Memoriam: NARST--Science Education." Also assembled into the "Memoriam" were: Smith's letter informing the membership of official actions regarding the journal; Barnard's 10 April 1961 letter requesting a meeting with Pruitt (Appendix C.2); and a letter from Pruitt to NARST members. Pruitt's letter presented his interpretations of the included correspondence and the actions of the Executive Committee. Additionally, Pruitt's "In Memoriam" article requested that readers express their opinions of the transpired events and also fill out two coupons. One coupon was to be mailed to NARST's president and the other to Pruitt. Boxes were provided for members to indicate whether they favored "Continuance of Science Education for NARST" or "New or possibly some other magazine for NARST."⁴⁵

"In Memoriam" was followed by a two-column, five-page article, "Ultimatum: Betrayal of a Loyalty."⁴⁶ In this article, Pruitt further expressed his feelings and views about NARST communications and decisions, and again solicited reactions from the readers.

"New or . . . Other Magazine"⁴⁷

With the decision to discontinue Science Education as the official journal of NARST, the Executive Committee, convened in Washington, had another major decision to make. In Smith's words transcribed from the tape,

we're faced with a number of alternatives. . . . We can exist, . . . for awhile, with no official publication . . . identify with another on-going journal . . . [or] seek an identification as a section of NSTA . . . [since] they have a very extensive possibility as far as publication is concerned. . . . [T]he fourth possibility is to strike out on our own with a brand new journal.⁴⁸

If the Executive Committee made the decision to initiate a journal of their own, Smith continued

that in itself opens a number of intriguing possibilities. Fletcher Watson has talked about Weson Press. . . . Branson and Boeck investigated the possibilities with Inter-science [Interscience] and Bergemann [Pergamon] Press. Bud [Obourn] had discussions with George Mallinson about . . . putting out this magazine on a temporary basis at Western Michigan State University. . . . And . . . my boss [Kenneth E. Anderson] has indicated that . . . we might be able to work out something in terms of our program at the University of Kansas. . . . No doubt there are many other possibilities. I'm sure that we should explore them all.⁴⁹

The Executive Committee made their decision--launch a new journal. They ruled out any temporary or interlude publication in preference to laying a firm foundation for the quality type of journal they envisioned for NARST's future. The time required to do so they recognized would be more than a year.

Publisher

For publishing the journal, the Committee wanted a company that would handle the business end of the publication, but would allow NARST to maintain control over the content and editorial policies. Desired requirements and guidelines, especially those that might affect publication costs, were discussed.

President Smith and Secretary-Treasurer Branson accepted the responsibility for drafting the proposal to be sent to the selected publishers, Interscience and Pergamon. This proposal was to include the guidelines established by the Executive Committee. One such specification was that the new journal would "be initiated as a quarterly with four issues to a volume, with a volume to be published each calendar year."⁵⁰ These volumes would consist of approximately 600 pages, 10 inches by 7 inches in size. The capability for good quality graphs, charts, and tables was mandatory. Advertising that appeared in the journal would be the responsibility of the publisher. However, the editor would approve the advertisements. As for membership subscriptions, NARST would guarantee a minimum of 300. Tentatively, the title of the new journal was to be "The Journal of Research in Science Teaching." In addition to guidelines such as the preceding, the proposal was to request that each company submit a sample contract for NARST's consideration.⁵¹

Financing for the journal was also discussed by the Executive Committee convened in Washington, D.C. Options considered included: increasing the dues, soliciting business and membership donations, collecting a \$1.00 registration fee at the annual conference, co-

sponsoring the journal with an organization such as AETS, and inviting persons from other groups to apply for NARST membership. One such group considered was the Supervisors Section of NSTA. Committee members felt these individuals would find the planned journal content useful.

Editorial Board

Barnes suggested that the Executive Committee had two jobs to tackle in their venture to initiate a new journal. He felt they had now completed one, the business side. The other side pertained to the structure of the editorial board and policy.

The Executive Committee resolved that the new journal would be run by an editorial board that was ultimately responsible to NARST's Executive Committee. Members of the board would have rotating terms that could potentially be reappointed. This board would be responsible for recommending policies and long-range plans to the Executive Committee and the editor would be responsible for day-to-day operations. So that the board did not experience the failures of past years, the Executive Committee desired to build in plans such as a multi-day meeting one or two times a year. In addition, they intended that at least one editorial board member be in a locale close enough to be of assistance to the editor. They also discussed the establishment of a panel of consultants from various fields of expertise within science education. These individuals "could be called upon to evaluate manuscripts and to be available to serve as the Editorial Board would determine."⁵²

Six was frequently mentioned as an appropriate number of members for this first editorial board. In addition to an editor, the Executive Committee desired to pre-identify three or four of these board members. Upon completion of this task, the Committee would then sit down with these individuals to establish foundation policies for the new journal. The remainder of the board members would be jointly-selected so that the new editor had input.

In identifying members who might serve as the first editor, the Executive Committee sought to suggest individuals who were located in institutions where adequate resources would be available. Such resources included secretarial help, duplicating facilities, and colleague support. Several capable NARST members were mentioned. However, the Committee felt that some of these individuals were already too busy, currently had conflicting obligations, would not accept the position, or were lacking adequate institutional support.

Frederic B. Dutton of Michigan State University was one individual considered to be an excellent candidate. They felt he had the competence, leadership, and professional stature required to launch a new journal.⁵³ Additionally, he had the potential support of "four or five people in science education right there at Michigan State . . . where they can get together at short notice to consider policy or management."⁵⁴

J. Stanley Marshall of Florida State University was mentioned. Obourn stated that Marshall was "one of the best young men in science education. He's a serious, devoted, dedicated guy."⁵⁵ In addition, Marshall had worked with Fletcher G. Watson at Harvard University.

Watson, himself, was a highly regarded choice. Hurd felt that Watson would be a strong candidate for editor of the new research journal because he had "put himself on record more times than anybody else, and in print about the quality of research in science teaching."⁵⁶ Additionally, even though Watson was very busy, Hurd felt there were considerable possibilities for personnel and financial support.

Many of the individuals discussed for the editorship were also considered as excellent candidates for the Editorial Board. The identification of these potential board members, along with the names of possible editors, was among the final decisions made at the Washington meeting. The meeting had been long and involved, but very productive. Several decisions and ideas, beyond those described in this chapter, significantly impacted NARST. It was one of the most important Executive Committee meetings in NARST history. However, two decisions stand out from the others. The first was the severance of the relationship with Science Education. The second was the decision to launch a new NARST journal.

The Search

In Washington, D.C. on June 24, 1961, the Executive Committee had decided that NARST should launch a new journal. The tentative name, "Journal of Research in Science Teaching," was indicative of the intended content. Proposals for its publication were to be sent to Interscience Publishers, Incorporated; Pergamon Press, Incorporated; and possibly some yet unexplored publishers. Additionally, designated members were to be approached about assuming the editorship for the

new publication. Contacting these individuals, as well as the publishing companies, was ultimately the responsibility of President Smith.

On June 26, only two days after the Washington meeting, President Smith mailed the first contact letter to a potential editor. By June 28, 1961, with the help of Secretary-Treasurer Branson, Smith had proposal letters in the mail to Pergamon Press, Incorporated, and Interscience Publishers, Incorporated. With the initial contact responsibilities fulfilled, the wait for responses began.

The first response was dated June 30, 1961. Watson was unable to assume the editorship.⁵⁷ The second turndown was received in late July from Dutton.⁵⁸ This meant that two key people felt they could not accept the position of editor.

Initial communications with a publisher were also not encouraging. In a letter to Obourn addressed, July 31, 1961, Smith wrote:

The letter from Interscience does not look very promising to me. The cost may be prohibitive unless we can get some "benefactor" lined up. It also looks to me as though we may have a real period of travail before our hoped for Journal materializes.⁵⁹

The cost alluded to by Smith was the projected \$15.00 subscription rate. This cost was almost twice what previous information had led the Executive Committee to expect.

These early communications with Interscience also included a merger notification dated June 22, 1961. The first paragraph of this notice read:

Shortly we shall announce publicly that we are joining forces with the House of John Wiley & Sons, Inc., in the publication and the distribution of our books. The swift pace of our editorial development in recent years now requires the substantial enlargement of our marketing and distribution facilities. We

believe the pooling of our facilities with those of Wiley will enable us to achieve our purposes, with improvement in services to our editors and our authors.⁶⁰

In addition to the preceding items, the Interscience correspondence included several questions pertaining to the content, targeted audience, and editorial board of the proposed journal. This information was deemed necessary for estimating the possible paid circulation and preparing a more accurate contract proposal.⁶¹

Throughout the summer and fall NARST's efforts to obtain an editor and publisher continued. By October the prospects for editor had been narrowed, but not the prospects for a publisher.

Foundation Months

As for the editorship, members of the Executive Committee were hopeful about obtaining J. Stanley Marshall of Florida State University. Several letters of correspondence, asking questions, responding to questions, and sharing concerns, were sent between Marshall and members of the Executive Committee.

January 1962

Finally, in late January, seven months after the Washington, D.C. meeting, the search for an editor had ended. Marshall accepted the position. He had not consented to be editor without giving the matter extensive thought.

There are so many things to consider in this proposition. . . . I realize completely that the job is an important one. If ever our profession needed a journal for the communication of research to its fellows, the time is now. And if there is to be such a journal, its quality is of paramount importance, for once having launched on such an effort we must do it right the first time. Like so many things we undertake in this business, failure means

not just going back to where we were but starting the second time from a much more primitive and difficult position.⁶²

Although the search for an editor had ended, the pursuit of a publisher was still in progress. Other publishing options had been explored, but Pergamon and Interscience were still the main prospects. On January 8, 1962, President Smith sent letters to each of these publishers in an effort to acquire information for his annual business meeting report. He asked them if they had any unanswered questions and if they still had "any continuing interest in the possibility of publishing our journal."⁶³

By January 23, Pergamon made reply to Smith's letter. In their response, they confirmed their interest in the journal. They stated that NARST would have complete control over editorial policy, the journal would be published quarterly with approximately 100 pages per issue, and the subscription price would be \$6.00 per member.⁶⁴

No reply was located from Interscience, but a letter pertaining to the exploration of another publisher was found. The letter was from Obourn to George G. Mallinson of Western Michigan University. Mallinson was editor of School Science and Mathematics. Throughout the endeavor to establish a new NARST journal, Mallinson had been willing to share his publishing experience and some of his resources to help further the cause. In this letter dated January 29, 1962, Obourn directs Mallinson to pursue publication possibilities with Banta Publishing Company. Banta had published School Science and Mathematics for several years.⁶⁵

In addition to editor and publisher correspondence, Smith wrote replies to several NARST members who had responded to Pruitt's

December 1961 Science Education articles, "In Memoriam" and "Ultimatum." Members, aware of the problems and negotiation efforts of the past three years, had voiced concerns about repercussions from members unfamiliar with the situation. Opinions were expressed about how the matter should be handled prior to, and during, the upcoming annual meeting. The following is an example of one such communication.

I was much distressed by the long section in the December issue of Science Education where Clarence Pruitt revealed and misinterpreted both correspondence and conversations. I am sure that you were distressed about this as were many other people. His statement on page 473 that he had "granted NARST the right to obtain, determine and edit all NARST materials appearing in Science Education" is I believe somewhat misleading. What constitutes NARST material? In speaking with Bud Obourn some weeks ago about this, he had the impression that this meant only the material coming from the annual meeting. Certainly that is not an adequate control on the editorial policies of the magazine.

The whole situation is exceedingly sticky. I sincerely feel that we should do everything we possibly can to get Pruitt to the NARST meeting in Washington. I hope that you as President would contact Pruitt requesting that he come to the meeting. Furthermore I feel that we should volunteer to cover his expenses so that he cannot claim that we are putting him under personal financial obligation. I would be willing to contribute fifty dollars toward a fund to underwrite his travel and living expenses. Probably there are several others who would be willing to do the same. Somehow we need to get this settled on a face-to-face basis.⁶⁶

The following is an example of a communication from a member not familiar with the problems and negotiation efforts involved in the NARST-Science Education relationship. These excerpts were taken from a letter written by charter member, Hanor A. Webb, a man known for his congeniality and calming influence. Unable to attend recent meetings

due to health, Webb had to rely on Science Education as his primary source of information about the journal decision. He wrote that

the announced decision to discontinue the relationship of our Association with its Journal, Science Education . . . is certainly unfortunate, probably unnecessary, possibly unwise. . . .

Is it not probable that further conferences with Pruitt might bring an understanding? Pruitt implies that there was really not much "negotiation," and that the objections to his management were unclear.

Pruitt has expressed willingness to give full consideration to "advice" from a properly selected committee of our Association. The objections that have doubtless been aired should be brought to his attention clearly; he is no stubborn fool, and has as much professional conscience as any of us. . . .

Negotiations should involve free and friendly discussions; they are not matters for ultimatums, for passing references, for commitments in the early stages. . . .

Possibly a different Committee should confer with you and the Executive Committee, and then with Pruitt.⁶⁷

Regardless of whether the individual did or did not appear to support the Science Education decision, President Smith wrote a letter of response. An excerpt from his response to Webb, the charter member who had written the preceding letter appears below.

I plan to provide a rather full and comprehensive review of the entire matter at the meeting in Washington. Nothing would please me more than to have you attend. Although the account of the situation rendered in Science Education may give the impression of arbitrariness on the part of the Executive Committee, I do not believe that this is true.⁶⁸

Smith then went on to briefly explain some of the efforts and intent of the Executive Committee over the previous three years.

February 1962

Amid the Pruitt-stimulated mail received by the Executive Committee, came the prompt response from Banta Publishing Company, the company Mallinson had approached. In a letter dated February 2, Obourn shared the Banta proposal with Editor Marshall. Main points of

the proposal included the estimated member subscription cost of \$6.00. This covered four 64-page issues per year. As for advertising and subscriptions, these items were to be handled by NARST.⁶⁹

In the same letter that contained the Banta information, names of potential candidates for both the editorial board and publications committee were listed. Marshall was in charge of the final selections for the editorial board and in drafting the preliminary journal policy statement. "The selection of the Publications Committee and the preparation of their duties" was the responsibility of Chairman W. Edgar Martin of the Office of Education.⁷⁰

February 21-24 were the dates of the Thirty-fifth Annual Meeting (1962), which was held in Washington, D.C. At this meeting Smith, as out-going president, made a formal presentation to the membership. His intent was to present some of the problems which had been confronted in the past year. He contended that "1961 was certainly a year of crisis and a very crucial year for NARST."⁷¹

Smith went on to report that NARST had received the final papers of incorporation and was incorporated January 30, 1961 (Appendix C-3). This meant that the Association was now ready to apply for tax-exempt status.

However, the main items Smith felt compelled to share with the group were "the activities that have transpired . . . relative to our relationship to Science Education."⁷² Accusations and interpretations, such as decisions being a "coup d'etat," had been presented by Pruitt in the December 1961 issue of Science Education. Smith wanted to make sure the membership knew how extensive efforts

had been over the past three years to amiably resolve relationship problems with Pruitt. Correspondence was quoted to help clarify how critical the problems and dissatisfaction had become and to share the intent and actions taken by the Executive Committee. Additionally, he desired that the membership understand

that the action which the Executive Committee took was fully mandated in the Annual Business Meeting of this Association last year. I think the Executive Committee acted with integrity throughout and that it acted within the intent and limitations of the mandate which it had received, as well as within the authority vested in it by the constitution and by-laws.⁷³

Smith continued by saying that he felt the severance of NARST and Science Education should be a closed issue. To reopen the issue would be "a repudiation not only of the Executive Committee but also of the action and of the group at the Annual Business Meeting last year."⁷⁴ He also reported about the efforts and negotiations underway toward the publication of a new NARST journal. Smith closed his comments on the NARST-Science Education issue with these words:

I believe that we should be looking forward and not backward. Finally, I think that it is highly desirable to close the book on what has been altogether a too unpleasant an episode in the life of the Association.⁷⁵

In his presidential address, Smith had mentioned that negotiations were in progress. At the Executive Committee meeting a complete report of the negotiations was presented by Secretary-Treasurer Branson and incoming president, Obourn. The minutes of this meeting stated that conferences with Pergamon, Banta, Scholastic, and others did not yield positive results.⁷⁶ However, Marshall reported promising negotiations with Interscience. Two members of the Interscience staff had met with the Executive Committee and Editor

Marshall during the week. The discussions were highly successful. Consequently, Interscience representatives returned to their company with the intent to seek approval for the publication of the new research journal.⁷⁷

In the event that Interscience gave a favorable reply, President Obourn was given authority to proceed with preliminary negotiations. The Committee also agreed that a lawyer should be employed.

Additionally, the first financial appropriation for the journal occurred at this meeting. Fletcher G. Watson moved that \$500 from the Association's treasury be advanced to the editor as an operating fund. The motion carried.

March 1962

With the finalization of a publisher potentially near, NARST intensified efforts to enhance journal progress. By March 7, 1962, Marshall had written his "Prospectus for a Publication Devoted to Research in Science Education."⁷⁸ It included a description of NARST, a preliminary draft of journal purposes, and summarization of the Association's role in the publication. Additionally, several policy proposals were listed for consideration by the publisher, NARST leadership, and the newly-formed editorial board.

Finally, after eight months from the initial decision to search for a publisher, the goal was accomplished. President Obourn received word from Interscience that they would publish the journal. Details of the contract were underway.

Marshall announced the confirmation of a publisher to the AETS representative with whom NARST had been communicating. In this letter

Marshall stated that he was "hopeful that AETS [would] join with NARST"⁷⁹ in the journal venture.

April 1962

The members of AETS confirmed the decision to cooperate with NARST in the establishment of a new research journal. At this time Fletcher G. Watson was president (1961-62) of AETS.⁸⁰ His successor for the 1962-63 term was fellow NARST member Willard J. Jacobson.⁸¹ A colleague of Jacobson, Frederick L. Fitzpatrick, was selected to represent AETS at planning meetings for the journal.⁸² Watson, in a communication to Obourn about AETS representation stated:

that the AETS should have an option now regarding the degree to which they would be involved in the official negotiations and become a legal sponsor. Since AETS is not incorporated separately, but only through the NSTA, I am not sure that they can enter directly into negotiations.⁸³

Interscience appointed Editor C. J. Mosbacher, Jr. to draw up the agreement for publication of the Journal of Research in Science Teaching. Mosbacher, in his April communication to President Obourn, listed the royalty terms that were to be included in the agreement.

May 1962

On May 4, Obourn placed a call to Mosbacher in New York. He requested that Interscience draft a preliminary document of agreements based upon the policies and prospectus NARST had prepared and the proposal statements of Mosbacher's April communication. Mosbacher agreed to do so within two weeks time.⁸⁴

On May 29 questionnaires were sent "to a representative sample of 35 NARST members asking them to give their preferences of titles for

the new journal."⁸⁵ The five suggested titles listed on the questionnaire follow:

Journal of Science Education Research
 Science Education Research
 Journal for Research in Science Teaching
 The Journal of Science Teaching Research
 Journal of Research in Science Teaching⁸⁶

The members were asked to rank their first three choices. Additional titles could be added.

June 1962

During June, questionnaires from 31 individuals were returned. The Publications Committee's tabulation of the respondents choices resulted in the title selection "Journal of Research in Science Teaching." The second choice had been "Journal of Science Education Research."⁸⁷

While data were being gathered on the preferred title for the journal, the wait for the promised draft proposal from Mosbacher continued. Repeated calls to Mosbacher in New York yielded statements "that he was working on the agreements and was just about finished with them."⁸⁸ He would then ask Obourn if he would be available the following week for a conference.

July 1962

In a letter dated July 6, 1962, Marshall sent to Obourn a rough draft of editorial policy, an updated list of the editorial board members, a generalized mock-up of the first issue, suggestions for evaluating manuscripts, and a tentative statement of format for contributors. He felt these items should go to the Publications

Committee and Editorial Board for their input. Marshall also expressed the urgency "to renew efforts to get together with the Interscience people"⁸⁹ for a continuance of negotiations.

In response, Obourn divulged to Marshall and the Executive Committee that he felt he was getting "a run around."⁹⁰ As a result, Obourn contacted the Editor-in-Chief of Interscience, Eric Proskauer. He shared the progress NARST had made in selection of an editor, editorial board, and journal title. He then affirmed that NARST was anxious to continue discussions but that they "had not heard from Mosbacher for a considerable time."⁹¹ Upon doing so, Obourn was informed that Mosbacher had left the firm. However, Proskauer promised to "bring the matter to a speedy conclusion and . . . prepare a draft agreement, which will be sent to you just as soon as possible."⁹²

Throughout the time Obourn was involved in efforts to establish the new journal, he had a desire to patch his and NARST's relationship with NARST's former journal editor, Clarence M. Pruitt. With these two goals in mind, Obourn wrote a letter to Pruitt dated July 24, 1962. The first paragraph of the letter and the final two paragraphs are included here.

Since becoming President of NARST, I have considered writing to you on several occasions. I have refrained because I was not exactly sure as to whether a letter from me would be welcome since I have been associated with the actions taken by the Executive Committee over the past year or more. . . .

Clarence, I trust that this letter will serve, not in anyway as an apology, but rather to assure you that there is good will and I hope that you can somehow find a way to accept the events of recent months as things that would inevitably have happened as NARST grew and developed and found a need to own its official journal. These events were not a recrimination of you and your

years of devotion, but rather the expression of the desire for independence of the Association.

I would personally like to be the one to welcome you back into the Association and to hope that we could again go forward as close friends in the interest of the best in our profession.⁹³

August 1962

While Obourn waited for the response from Pruitt, the long-anticipated, Wiley-Interscience proposal finally arrived on Saturday, August 18. The accompanying cover letter from the science education editor, Frederick E. Seiler, indicated that he had

found widespread interest in the projected journal, Research in Science Teaching. Every professor of Science Education as well as many science teachers seemed to be counting on this journal to make an important contribution in his field.⁹⁴

By August 23, the proposed agreement and cover letter were in the hands of the Executive Committee members. A ballot for responses was enclosed with the agreement with instructions to spell out in detail any changes desired in the document.

September 1962

In general the Executive Committee felt that the proposed agreement was good. However, they raised some questions regarding the legal ability of NARST to conform with a few specific items in certain sections. Consequently, outside counsel was sought on those items.⁹⁵ During September members of the Executive Committee, "after considerable deliberation and several conferences, . . . prepared a revised form of the Agreement document."⁹⁶

October 1962

The revised agreement was sent to the Executive Committee members for their approval. When approved, the negotiations with Wiley-Interscience would be resumed.

November 1962

In a letter to Frederic B. Dutton, dated November 6, Obourn related the hope of

meeting in the near future with the representatives of Interscience-Wiley. We have taken a little longer on this matter to enable AETS (Fitzpatrick and Jacobson) to go over the Agreement to be sure that it was in order insofar as that Association was concerned.⁹⁷

Obourn also reported that the Equipment Division of the Scientific Apparatus Manufacturers Association had considered NARST's financial needs. This group desired to meet with NARST's Executive Committee and Finance Committee to plan for "an annual subscription from this and other Associations."⁹⁸

December 1962

On December 4, the following NARST members--Joseph D. Novak, W. Edgar Martin, J. Stanley Marshall, George G. Mallinson, Frederick L. Fitzpatrick, Cyrus W. Barnes, and Ellsworth S. Obourn--met with Kenneth Anderson and James Irving, president and secretary of the Furniture and Equipment Section of the Scientific Apparatus Manufacturers Association. This group discussed plans for NARST obtaining financial support from business and industry. Of the ideas presented, the one offering patron memberships at \$100 per year was

deemed the most feasible starting point. Plans were begun to implement the idea.⁹⁹

The individuals listed above met again on December 5, but this time with representatives of Interscience-Wiley. Each section of the journal agreement was discussed and adjustments were made (Appendix F-1).¹⁰⁰ In a December 11 letter to Dutton, Obourn wrote that

[o]n some items Wiley came to our views, on some items we came to their views and on some items there was a happy compromise. . . . Dr. Proskauer and Mr. Seiler said that a new Agreement incorporating the necessary changes would be drawn up at once and sent to us for signing.¹⁰¹

In the interlude between the preceding meeting and the receiving of the revised agreement, on December 17, President Obourn wrote another letter to Science Education editor-owner, Clarence M. Pruitt. Pruitt apparently had responded very favorably to Obourn's goodwill and welcome-back letter in July. He was now offering Obourn the opportunity, as the thirtieth president of NARST, to become the recipient of the Thirty-fourth Science Education Recognition Award. Obourn was concerned about the ethics and image that would be portrayed if he accepted the honor. "Just last week I was the NARST President who finally closed negotiations with Interscience-Wiley to publish a new quarterly Journal for Research in Science Teaching."¹⁰² However, Obourn was very interested in the possibility of using the

circumstance to once and for all time heal over the deep wounds that we all suffered over the last 18 months? Could we through this gesture from you to me again cement the bonds between you and me and NARST? I honestly believe that there is a very important place for Science Education magazine in the profession. After all these years of professional service I am certain that most of the membership of NARST will continue their subscriptions. . . .

I need your help in deciding what to do. I really want to accept this award, if through what appears in that issue of Science Education, and what appears in the first issue of the new

magazine can indicate that warm relations have been re-established.¹⁰³

On December 24, Pruitt enthusiastically responded to Obourn's letter. He praised Obourn stating, "Your two fine letters have immeasurably increased my previous high regard for you. It took real character and integrity to have taken the steps you did."¹⁰⁴ Pruitt was pleased that there could still be a tie between NARST and Science Education through the continuance of the past policy of recognizing the incumbent NARST president. Pruitt went on to say

Time is a kind friend and eases pain--as it has in this case. So let's say all our personal differences are forgotten and forgiven. If we as human beings cannot forgive each other, how can God ever forgive our greater sins?

Maybe things will work out wonderfully well for NARST, Science Education, and the new Journal of Research in Science Teaching. That's our hope.¹⁰⁵

By December 28, possibly the same date as Obourn received Pruitt's letter, the revised draft of the proposal for publishing the Journal of Research in Science Teaching was mailed to NARST. Since September first "the Executive Committee [had] examined and criticized three revisions of the Agreement."¹⁰⁶ The December draft was hoped to be the final. Both the original draft and the carbon copy had been enclosed for the official signing (Appendix F-2).

Overall, December 1962 proved to be a productive month both for activities relevant to NARST's new journal and for relations regarding NARST's former journal. Certainly President Obourn and others began to feel some relief from some of the tensions and frustrations of the preceding two years.

January 1963

Copies of the revised document were sent to all members of the Executive Committee and to the AETS representative Frederick L. Fitzpatrick. The document received unanimous approval. Now, more than a year and a half after the original decision to launch a new journal, the document inaugurating the sought Journal of Research in Science Teaching was approved and ready for signing.

The initial decision to publish a new journal had been made in Washington, D.C. Likewise, the report to annual meeting attendees of circumstances surrounding the decision, occurred in Washington. Fittingly, then, the culminating document signing also took place in D.C. The date was January 18, 1963. The signatures that appear on the original document (Appendix F-3) are: Ellsworth S. Obourn, NARST President; Joseph D. Novak, NARST Secretary; J. Stanley Marshall, NARST Journal Editor; and John S. Snyder, John Wiley & Sons Vice President.¹⁰⁷

February 1963

A year after preliminary publisher negotiations had been announced at the Thirty-fifth Annual Meeting (1962), the final negotiated contract was able to be presented to the membership. This presentation at the Thirty-sixth Annual Meeting (1963) was made by W. Edgar Martin, Chairman of the Publications Committee. Minutes of the meeting recorded the membership's approval of the NARST journal agreement with Wiley.¹⁰⁸

In addition to the reading of the contract, three additional reports pertinent to the new journal were given. These included the

Publications Committee Report (W. Edgar Martin, Chairman), the Editor's Report (Ernest Burkman, Editorial Advisory Board member), and the NARST-AETS Relations Report (Harold S. Spielman, Secretary-Treasurer of AETS).¹⁰⁹

In the AETS report Spielman indicates that AETS was pleased with the progress of the journal and the fact that NARST had taken the lead in developing it. He stated that AETS

will cooperate in any way we can to make it a success. We hope that AETS members can and will make substantial contributions in the form of articles, reports and other writings for the journal.

. . .

We hope that ways can be found by which the new journal can become a regular avenue of communication with AETS members. Perhaps there can be a regular section devoted to the news from AETS. . . . Also we hope that there may be opportunities for systematic investigation and discussion of important issues related to teacher education even though these discussions may not strictly involve research. . . .

We visualize NARST and AETS as complementary organizations, existing in a cooperative, mutually profitable, symbiotic relationship. We hope the establishment of the journal will be but the first of many joint efforts by both organizations leading to the improvement of science education in the United States of America and throughout the world.¹¹⁰

Nearly 20 months had passed since the initial 1961 decision to launch a new journal, and the presentation of this 1963 report acknowledging the newly established journal. The effort, time, successes, and frustrations en route to this point had been considerable. Soon, however, the nearly two years of endeavor would result in the long-anticipated first publication of the Journal of Research in Science Teaching.

NOTES

¹Clarence M. Pruitt, "Key to the Future of NARST," Journal of Research in Science Teaching 1 (1963): 16-17.

²NARST, Minutes Thirty-third Annual Meeting (1960), 233.

³Haym Kruglak, letter to Clarence H. Boeck, 7 October 1959, NARST Archives.

⁴NARST, Minutes Thirty-third Meeting (1960), 234.

⁵Ibid., 232.

⁶Ibid., 236.

⁷Clarence M. Pruitt, "For the Record," Science Education 44 (April 1960): 238-39.

⁸Ibid., 239.

⁹Ibid.

¹⁰Ibid.

¹¹Ibid., 239-40.

¹²Ibid., 240.

¹³Ibid.

¹⁴Ibid., 240-41.

¹⁵Ibid., 241.

¹⁶Ibid.

¹⁷Ibid.

¹⁸Ibid., 242.

¹⁹Ibid.

²⁰Ibid., 244.

²¹Ibid.

²²NARST, Minutes of the Thirty-fourth Annual Meeting, 22-23 February 1961, Science Education 45 (December 1961): 462.

²³Ibid., 458.

²⁴Ibid.

²⁵"Conference Report," transcription, 2.

²⁶Report of confidential conversation between Clarence M. Pruitt, Clarence H. Boeck, and Vaden W. Miles, 12-13 February 1960, NARST Archives.

²⁷Ibid., 1.

²⁸Ibid.

²⁹Ibid., 2.

³⁰Clarence M. Pruitt, "In Memoriam: NARST--Science Education, May 1929-December 1961," Science Education 45 (December 1961): 466.

³¹J. Darrell Barnard, letter to Herbert A. Smith, 1 June 1961, Science Education 45 (December 1961): 463.

³²Pruitt, "In Memoriam," 466.

³³"Conference Report," transcription, 79.

³⁴Ibid., 71.

³⁵Ibid., 1.

³⁶Henry James Werner, letter to Clarence M. Pruitt, 4 January 1961, NARST Archives.

³⁷Welch Scientific Company, letter to National Association for Research in Science Teaching, 12 May 1961, NARST Archives.

³⁸Sr. Ernestine Marie, letter to Clarence H. Boeck, 25 January 1961, NARST Archives.

³⁹Kruglak, letter, 7 October 1958.

⁴⁰Ibid.

⁴¹Fletcher G. Watson, letter to Earl R. Glenn, 22 January 1960, NARST Archives.

⁴²"Conference Report," transcription, 2.

⁴³Ibid., cover page.

⁴⁴Pruitt, "In Memoriam," 464.

⁴⁵Ibid., 471.

⁴⁶Clarence M. Pruitt, "Ultimatum: Betrayal of a Loyalty," Science Education 45 (December 1961): 473-77.

⁴⁷Pruitt, "In Memoriam," 471.

⁴⁸"Conference Report," transcription, 26-27.

⁴⁹Ibid., 27.

⁵⁰Herbert A. Smith, letters to publishers--Interscience and Pergamon Press, 28 June 1961, NARST Archives.

⁵¹Ibid.

⁵²Herbert A. Smith, letter to Fletcher G. Watson, 26 June 1961, NARST Archives.

⁵³Herbert A. Smith, letter to Frederic B. Dutton, 10 July 1961, NARST Archives.

⁵⁴"Conference Report," transcription, 111.

⁵⁵Ibid., 113.

⁵⁶Ibid., 114.

⁵⁷Fletcher G. Watson, letter to Herbert A. Smith, 30 June 1961, NARST Archives.

⁵⁸Frederic B. Dutton, letter to Herbert A. Smith, 21 July 1961, NARST Archives.

⁵⁹Herbert A. Smith, letter to Ellsworth S. Obourn, 31 July 1961, NARST Archives.

⁶⁰Interscience Publishers, Inc., letter to Advisers, Editors, Authors, and Friends, 22 June 1961, NARST Archives.

⁶¹Eric S. Proskauer, Interscience Publishers, Inc., letter to Herbert A. Smith, 25 July 1961, NARST Archives.

⁶²J. Stanley Marshall, letter to Herbert A. Smith, 13 October 1961, NARST Archives.

⁶³Herbert A. Smith, letters to publishers--Interscience and Pergamon Press, 8 January 1962, NARST Archives.

⁶⁴Detlev J. Raymond, Pergamon Press, letter to Herbert A. Smith, 23 January 1962, NARST Archives.

⁶⁵Ellsworth S. Obourn, letter to George G. Mallinson, 29 January 1962, NARST Archives.

⁶⁶Fletcher G. Watson, letter to Herbert A. Smith, 1 February 1962, NARST Archives.

⁶⁷Hanor A. Webb, letter to Herbert A. Smith, 17 January 1962, NARST Archives.

⁶⁸Herbert A. Smith, letter to Hanor A. Webb, 22 January 1962, NARST Archives.

⁶⁹Ellsworth S. Obourn, letter to J. Stanley Marshall, 2 February 1962, NARST Archives.

⁷⁰Ellsworth S. Obourn, letter to J. Stanley Marshall, 1 March 1962, NARST Archives.

⁷¹Herbert A. Smith, "President's Report, February 22, 1962," p. 1. Thirty-fifth Annual Business Meeting, Washington D. C, NARST Archives.

⁷²Ibid.

⁷³Ibid., 11.

⁷⁴Ibid.

⁷⁵Ibid.

⁷⁶NARST, Minutes of the Executive Committee, 24 February 1962, NARST Archives.

⁷⁷Ibid.

⁷⁸J. Stanley Marshall, "Prospectus for a Publication Devoted to Research in Science Education," 7 March 1962, NARST Archives.

⁷⁹J. Stanley Marshall, letter to F. L. Fitzpatrick, 30 March 1962, NARST Archives.

⁸⁰Jacobson, "AETS," 18.

⁸¹Ibid., 19.

⁸²Ellsworth S. Obourn, letter to Members of Executive Committee, 7 May 1962, NARST Archives.

⁸³Fletcher G. Watson, letter to Ellsworth S. Obourn, 11 May 1962, NARST Archives.

⁸⁴Obourn, letter, 7 May 1962.

⁸⁵"Naming the New Journal," NARST Newsletter (Fall 1962): 2-3.

⁸⁶*Ibid.*, 2.

⁸⁷*Ibid.*, 3.

⁸⁸Ellsworth S. Obourn, memorandum to Executive Committee, 18 July 1962, NARST Archives.

⁸⁹J. Stanley Marshall, letter to Ellsworth S. Obourn, 6 July 1962, NARST Archives.

⁹⁰Obourn, memorandum, 18 July 1962.

⁹¹Ellsworth S. Obourn, letter to Eric S. Proskauer, 10 July 1962, NARST Archives.

⁹²Eric S. Proskauer, letter to Ellsworth S. Obourn, 13 July 1962, NARST Archives.

⁹³Ellsworth S. Obourn, "Obourn--Pruitt Correspondence," Science Education 47 (February 1963): 15.

⁹⁴Frederick E. Seiler, letter to Ellsworth S. Obourn, 17 August 1962, NARST Archives.

⁹⁵Ellsworth S. Obourn, letter to Eric S. Proskauer, 3 October 1962, NARST Archives.

⁹⁶*Ibid.*

⁹⁷Ellsworth S. Obourn, letter to Frederic B. Dutton, 6 November 1962, NARST Archives.

⁹⁸*Ibid.*

⁹⁹Ellsworth S. Obourn, letter to Frederic B. Dutton, 11 December 1962, NARST Archives.

¹⁰⁰*Ibid.*

¹⁰¹*Ibid.*

¹⁰²Obourn, "Obourn--Pruitt Correspondence," 16.

¹⁰³*Ibid.*

¹⁰⁴*Ibid.*, 17.

¹⁰⁵*Ibid.*

¹⁰⁶Cyrus W. Barnes, NARST Newsletter 15 January 1963, p. 2.

¹⁰⁷National Association for Research in Science Teaching and John Wiley & Sons, Inc., Agreement between, 1 January 1963, p. 6, NARST Archives.

¹⁰⁸NARST, Minutes of the Thirty-sixth Annual Meeting, 20-23 February 1963, pp. 2-4, NARST Archives.

¹⁰⁹Ibid.

¹¹⁰Harold S. Spielman, "Report on Relations Between NARST and AETS," 21 February 1963, NARST Archives.

Chapter VII

NARST SECOND JOURNAL: JOURNAL FOR RESEARCH
AND SCIENCE TEACHING (1963-)

February 1963 was the month that the final negotiated JRST contract was presented to the NARST membership. However, February 1963 was also the issue of Science Education in which Pruitt presented Obourn with the Thirty-fourth Science Education Award. Appearing immediately following the award presentation were an article by Obourn paying tribute to Science Education, the July and December 1962 correspondence between Obourn and Pruitt, and Obourn's report to NARST as out-going president. These four items were part of the Obourn-Pruitt effort to re-establish warm relations between NARST and its former publication.

In Obourn's tribute to NARST's former journal and journal editor, he summarized the history of Science Education. Additionally, he presented the idea that lingering in the background throughout the years of the NARST-Science Education relationship was "always the desire and hope that somehow, someday NARST would find a way to have its own journal."¹ He continued by stating, "This time has been long in coming."²

The title of Obourn's tribute was "Sine Qua Non"--translated "Without Which Not." He contended that "This trite phrase sums up in a rather dramatic way the debt which the Journal for Research in Science Teaching owes to Science Education magazine as it is

established as the Association-owned magazine."³ He then went on to list six tributes, each beginning with "WITHOUT." The last one read:

WITHOUT its dedicated service over the years to the Association, the dream of having its own journal of research could never have been realized.⁴

May 1963 marked the realization of the dream of which Obourn spoke--the first issue of a NARST-owned journal, the Journal of Research in Science Teaching (JRST). At the time of this issue's publication, NARST had been in existence 36 years and involved in publishing research for 35. In the title of the article Obourn wrote for the first JRST, Obourn described these years as the "Prologue to the Future."⁵ He recounted that

[t]he medley of events which comprise this prologue, while kaleidoscopic, were stroked with bold and able hands by the founders of this Association. Our profession will not soon forget the work of such men as S. Ralph Powers, Charles J. Pieper, Francis D. Curtis, Hanor A. Webb, Ralph K. Watkins, Elliot R. Downing, Gerald S. Craig, Clarence M. Pruitt, Otis W. Caldwell, Earl R. Glenn, Wilbur Beauchamp, Harry A. Carpenter, Archer W. Hurd, Ira C. Davis, and many others.⁶

As agreed, Obourn and Pruitt fulfilled the second phase of their plan to restore positive feelings regarding the NARST-Science Education relationship. Mutual felicitations had appeared in the February award issue of Science Education and now they appeared in the first issue of JRST. In Pruitt's article "Key to the Future of NARST," he presented a brief history of NARST's first journal. He then went on to share the potential of the new journal and wish it success.

As for Obourn, he again paid tribute to Science Education, a "magazine which served the Association with distinction for many years as its official organ."⁷ He reiterated his esteem for the early

members who had given "of their own resources, time, and effort"⁸ to produce Science Education. A special point was made to recognize Science Education's long-time editor-owner, Clarence M. Pruitt, for his numerous years of "faithful and devoted effort in behalf of science education."⁹

Along with his tributes, Obourn acknowledged that

the past is an ever-present foundation upon which a future must be built. Now, after 35 years of distinguished service to the profession of science education, the National Association for Research in Science Teaching finds itself the proud parent of this new venture [JRST] in collecting, assessing, and disseminating the results of research in science teaching.¹⁰

Following in this chapter is the chronicle of JRST, after the signing of the initial publishing contract. From 1963-1990 JRST underwent several changes in format, content, procedures, and policies. As an attempt to summarize changes visible within the journal itself, Appendix G-1 was compiled. Superscript "a" within this table denotes that major changes occurred on the cover, within the issue format, and/or within items marked. To better understand the struggles, efforts, and successes of the foundational years of JRST, the chapter covers the early years in much greater depth than the recent years. This chapter begins with the Journal status report Editor Marshall presented at the Thirty-sixth Annual Meeting (1963).

Groundwork

Marshall, in his 21 February 1963 report for the Thirty-sixth Annual Meeting, shared that "[p]resent plans call for the publication

of the first issue by late March or early April."¹¹ He announced that

[w]ith the finalizing of the agreement, activities in connection with the Journal are now primarily concerned with the editorial and mechanical problems of the publication of the first issue. Mr. Roger Truelsen of the Interscience Division of Wiley is acting as a consultant in terms of format, type, cover, and other physical aspects of the magazine, and the decisions regarding these matters will hopefully be finalized within a week.¹²

In addition to the editorial and mechanical problems, alluded to in the preceding, there was financial concern. To assist in addressing this issue, a proposal to the National Science Foundation (NSF) requesting interim support was drafted late in 1963. The tentative proposal requested \$10,000 toward the editorial costs of publishing.¹³ Joseph D. Novak, secretary-treasurer, was largely responsible for the proposal. With the help and advice of several individuals, the final proposal for JRST support was ready in the spring of 1964. In the final proposal the grant request had been reduced to \$4,225.¹⁴ Even with the reduction, and much to the disappointment of the Association, a letter dated November 30, 1964, indicated that NSF was unable to support the request.¹⁵

In addition to the NSF proposal, another means of financial assistance, developed in 1962 and initiated in 1963, was a Patron membership.¹⁶ This membership required a contribution of \$100 or more. Its "purpose [was] to offer an opportunity for business and industry which has a relation to research in science education, to support [NARST and its new] enterprise."¹⁷

When prospective Patrons were approached, the purposes of the new journal JRST were often included in the communications. The eight

initial purposes for the new publication, shared with the prospective Patrons, are listed below.

The purposes of the journal will be to publish:

- 1) abstracts of significant research studies in science education at all levels and in all fields from throughout the United States and other countries;
- 2) articles with a non-research orientation which deal with such matters as philosophy, public policy, historical perspectives, and other things on which the membership may wish to express themselves;
- 3) guest editorials, reports of symposia, committee reports, and similar material dealing with significant developments in science or in science education which have implications for educational research;
- 4) letters to the editor and perhaps other statements by readers which present critical views of published articles or which suggest areas in which research is needed;
- 5) book reviews;
- 6) reports on matters of interest to the Association including experimental programs for science curriculum improvement, the establishment of research centers of NARST, and similar matters;
- 7) occasionally biographical materials on leaders in research in science education; and
- 8) the program and selected portions of the proceedings of the annual meeting of NARST.¹⁸

The listing of purposes such as the preceding are critical to the successful operation of a publication. However, another very critical element in the success of such an endeavor is leadership. Several individuals had been carefully selected to serve as the first Editorial Advisory Board for the new journal. These individuals included:

Glen Blough, University of Maryland, College Park, Maryland
 Ernest Burkman, Florida State University, Tallahassee, Florida
 William Cooley, Harvard University, Cambridge, Massachusetts
 Frederick L. Fitzpatrick, Teachers College, Columbia University,
 New York, New York (AETS Representative)
 Paul DeHart Hurd, Stanford University, Palo Alto, California

Joseph F. Jordan, John Wiley & Sons, Inc., New York, New York
(John Wiley Representative)

John M. Mason, Michigan State University, East Lansing, Michigan

Sidney Rosen, University of Illinois, Urbana, Illinois
(Book Review Editor)

H. Craig Sipe, Peabody College, Nashville, Tennessee

In a message to these Board members, Editor Marshall affirmed that "[t]his will be a working Board, not an honorary one. This as fair warning to any who may become faint hearted, tied up with other things, etc." With the considerable groundwork the launching of a new publication dictates, and the effort the first two volumes require, the Editorial Board surely experienced the truth in Marshall's words "working Board."

First Issue

Endeavoring to adhere to the eight original Journal purposes, the first Editorial Advisory Board sent the initial issue of JRST to the printer in time for a May publication. Thus, the first issue of the Journal of Research in Science Teaching became reality in May 1963. The date was almost two months later than projected at the February annual meeting. The size, 98 pages, was as predicted, but the content was not. Marshall had indicated that the first issue would

be approximately 100 pages in length and will contain articles of two types: reports of research studies and articles dealing with important philosophical considerations. In addition to the articles the Journal will contain review of selected books and a section for comment and criticism.¹⁹

Articles for philosophical consideration existed, but reports of research, as originally intended, were lacking. Most of the articles described various aspects or activities within the field of science

education. Book reviews occurred, but the section mentioned for comment and criticism did not appear until Issue 2.

Reasons for the first issue's delay in publication and the shortage of research reports may partially be explained by this February 1963 message from Marshall to the Editorial Advisory Board.

It is very clear that some statement to members of NARST and AETS must be prepared and, I now believe, should be sent out in a separate mailing before the first issue--this to stop, or slow down at least, the flow of poorly done manuscripts we are getting. . . . I am not always happy with the quality of the stuff we are getting and would like a strong "quality control" statement put in print.

Now!! Having said this, I would add that all of us who review manuscripts must be realistic and remember what organization it is that we are working for. Our job is to get out a magazine for NARST-AETS, and we had a pretty fair idea of the limitations before we started. The fact is that the stuff we are getting is probably fairly representative of what is being done in our profession; its failure to be really first class research or to be the kind of thing we would accept in our own departments is beside the point. Of course we should accept only the best and we should also try to get contributors to improve their manuscripts where it can be done. (And, incidentally, we may thereby be able to raise standards in science education by our own small efforts--slightly!) But at the same time we must recognize that we are dealing with our own and for better or for worse they are all we've got (unless of course we want to run a Journal entirely for a dozen or so individuals--and could get their manuscripts).²⁰

Although dissatisfied with many of the submitted manuscripts, Marshall was very pleased with a series of historical sketches written for JRST's first issue. These sketches, authored by early NARST members, are listed below:

- "Prologue to the Future," Ellsworth S. Obourn
- "The Beginnings of Organized Research in the Teaching of Science," Samuel Ralph Powers
- "The Evolution of Science Education Research," Francis D. Curtis
- "Famous Firsts of NARST," Hanor A. Webb
- "Key to the Future of NARST," Clarence M. Pruitt
- "To the New Generation in NARST," Ralph K. Watkins

Regarding these special articles, Marshall wrote

They must surely make this issue something of a collector's item. The Journal is the richer for these messages from several of the real fathers of science education and the Association is grateful to them and to President Obourn who arranged for this unusual collection of essays.²¹

As Marshall had mentioned in the preceding quote, Issue 1 of JRST was probably a collector's item to many NARST members, but for reasons other than the one stated. These alternative reasons arose from events and experiences that preceded the first issue. The groundwork that had led to the publication of Issue 1 had required strong determination, countless hours, and the "best efforts of a good many people."²²

Volume 1 Continued

Issue 2 of Volume 1 included more research-related articles than did Issue 1 (Appendix G-1). Nevertheless, the concern about the quality of submitted manuscripts was still prevalent. The targeted problem this time was not the condition of the manuscripts, but the content. In his message to the readers, Marshall shared that reviewing reports was often a rewarding experience but that it could also be a sobering one. He presented the following observations of the research he had reviewed.

1. The design of much of the research shows limited imagination; when compared with studies in education done thirty years ago, it is drearily the same.
2. We spend too much effort on status studies--on "evaluating on-going practice instead of functioning as a beacon" as Dr. Smith says.
3. There are too many "no-significant-difference" studies which casts doubt on the validity of our measurements or, alternatively, on our hypotheses.

The founding of NARST more than thirty years ago, when educational research was in its infancy, and the continuing role of its members in providing leadership in science education are

noteworthy. There remain, however, the urgent questions of how the standards of performance in educational research can be raised and whether the Association should develop a plan to expedite some sort of breakthrough.²³

As for the content of Issue 3, included among its articles were several "Project" reports, many of which became part of the "alphabet curricula of the 1960s, and three articles pertaining to mathematics. In the NARST Archives' correspondence files (1963-1965), references were found encouraging more publication of mathematics-related manuscripts and others questioning the practice. Marshall's response was that "[i]n the absence of any clear policy, I shall continue to use articles dealing with the teaching of mathematics as they appear to be appropriate and of interest to science educators."²⁴

Marshall's editorial comments in the first two issues dealt with the Journal and its content. The message for this third issue, however, focused on the involvement of American science educators in various international enterprises. In fact, Marshall was writing his editorial in Ankara, Turkey. He and colleagues were "helping to set up a National High School of Science with funds from the government of Turkey and Ford Foundation."²⁵

This overseas responsibility, and the resultant extended stays in Turkey, became a concern to several NARST members. They felt that from such a distance and with such a demanding, additional commitment, an editor could not perform the day-to-day jobs a struggling new journal required.²⁶ Even with the assistance of on-campus Editorial Board member, Ernest Burkman, some members contended that the void created by Marshall's absence was detrimental to building a firm foundation for JRST and keeping the Journal on schedule.

In spite of the handicaps Marshall's work in Turkey may have created, the final issue of Volume 1 was published about one year after the first, in the spring of 1964. Several positive items were able to be presented in the editor's message for this fourth issue. For instance, the Shell Companies Foundation had donated \$2,000 to NARST

in appreciation of the outstanding contributions to improved science teaching made over the years by Dr. Paul deH. Hurd and Dr. Philip G. Johnson, coordinators of the Shell Merit Programs at Stanford and Cornell Universities, respectively.²⁷

Additionally, the list of Patron members had grown to 18 by the time of this last issue.

Another encouraging aspect reported was that the Journal was being well received in other countries. In Great Britain alone, there were more than 50 library subscriptions.²⁸ However, a not-so-positive note was the discouragingly low number of college and university library subscriptions within the United States. Marshall contended that

[t]his situation has apparently resulted from policies in many libraries which prevent their ordering subscriptions for new journals unless a member of the faculty requests the subscription--and faculty members, even in institutions where we know there are members of NARST and AETS, have evidently neglected to do so.²⁹

In addition to the preceding items, Marshall announced that a new feature, "Short Reports," was being introduced in Issue 4 (Appendix G-1). This new feature made possible the publication of manuscripts that the Editorial Board had previously had difficulty handling.³⁰

Challenges Remain

The completion of JRST Volume 1 was a major milestone en route to establishing a successful science education research journal.

However, challenges yet remained, and two of the challenges included content and production lag.

Content

As shown in the preceding sections pertaining to Volume 1, the editor and board had a variety of content concerns. At least one such concern was presented in the narrative of each of the first four issues:

Issue 1. Obtaining enough acceptable manuscripts

Issue 2. Encouraging quality research reports

Issue 3. Making content decisions "in the absence of
any clear policy"³¹

Issue 4. Developing Journal features that met the
needs of NARST and AETS members

Besides the editor and editorial board, members also expressed content concerns. As presented in preceding sections, some members felt the quality of the Journal would be affected by Marshall's responsibilities in Turkey. A few individuals thought mathematics research should be included and expanded within the journal, but other members supported the opposite viewpoint. In addition to these previously identified concerns, the feeling had been expressed that the Journal was becoming too "general purpose."³² A few even made a correlation of its content to that of NARST's former journal, Science Education. Some persons perceived there were too many articles

pertaining to methodology.³³ Others objected to the selection of various manuscripts over certain research manuscripts submitted. Additionally, in the 1963-65 correspondence files of the NARST Archive, statements were found suggesting that Editorial Board members scout annual meeting sessions for papers worthy of publication. Responses were found indicating that this was being done on a limited basis, but that the practice could be expanded.

Journal Purposes

Editorship and membership content concerns, such as the preceding, led to the decision to more clearly define and delineate the purposes of JRST. The resultant document was intended to provide the Editorial Advisory Board a firmer base from which to operate. The Publications Committee was charged with the task.

The Journal purposes resulting from this committee's effort were dated February 1965. They began with Article II of the Articles of Incorporation for the Association:

The purpose of this corporation shall be to promote research in science education, and to disseminate the findings of this research in such ways as to improve science teaching.

The Association shall publish, or cause to be published for the benefit of its members and others, selected articles, reviews or reports of research which are in harmony with the purposes of the Association.³⁴

Directly from the objectives stated in Article II, the Publications Committee developed the purposes for JRST. They described the purposes as falling into three categories. Summarized briefly these categories were as listed below:

1. To serve the broad professional objectives, needs, obligations, and responsibilities of NARST

2. To serve the internal needs of the Association for facilitation and coordination of activities
3. To serve the professional publication and dissemination needs of members³⁵

Following these three categories were statements about the general purposes for the Journal and implementation of the purposes. The document concluded with 12 purposes, 4 more than the 1963 document. Nearly all these purposes, related to science education research more definitively than those of 1963 (Appendix H-1).³⁶

Production Lag

In addition to a newly-written set of purposes for the Journal, 1965 yielded additional progress in the production of JRST. This progress was in regard to the production lag.

The production lag had existed since the Journal commenced its publication. The first issue of Volume 1 was unable to be published until May of 1963, and the fourth and final issue had not been published until the spring of 1964. Correction of this production lag was intended so that a four-issue volume was completed within a single calendar year.

Some causes of the production lag, and efforts to correct these obstacles, were presented to the Executive Board in the March 1964 Editor's Report. Marshall related concern about the quality of many of the manuscripts and illustrations received and the lack of "good manuscripts reporting on worthwhile educational research."³⁷ Marshall indicated that problems such as the preceding had led to secondary problems.

One of the secondary problems was that because they were always fighting a deadline, manuscripts were often not returned to their authors for cleaning up. Instead, he had this work done by his office. He admitted that this was an expensive way to operate. Nonetheless, he felt that "if [he] were to send the manuscripts back to the authors, [he] would have no way of knowing when they would be returned."³⁸ He continued by stating that "[t]he demands of this kind of editorial work have been considerable and have exceeded my estimate by a wide margin."³⁹

The other related problem Marshall presented was that of soliciting manuscripts. He confided that

[f]rom the beginning I have sent out letters to prospective authors but in modest numbers and only to people about whom I happen to hear or read in incidental ways. I have finally concluded that the job must be undertaken now in a more organized fashion; that is, I must search systematically the programs of national meetings, Dissertation Abstracts, and similar sources.⁴⁰

To do this systematic search, he intended to hire a half-time graduate assistant.⁴¹

In the Journal, Marshall referred to the production lag in his editorial for Volume 2:1.

Volume One was accompanied by problems about equal in number and magnitude to those which one ought to expect in starting a new professional journal. The Editor and the Editorial Advisory Board are no more pleased than are the members of NARST and AETS about our production lag, a circumstance that we have devoutly tried to avoid. But the prospects, we are pleased to say, are good for catching up by the end of the year or at least by the early part of 1965.⁴²

The publication lag was not solved by the beginning of 1965, as hoped. Although, by the time of the Fall 1965 NARST Newsletter Marshall was able to announce " [T]he biggest news I suppose is that

we are at last current--and I hope we will be able to stay that way."⁴³

To be caught up by fall 1965, as Marshall reported in the newsletter, meant the production of seven issues between spring 1964 and September 1965. With the shortages and quality problems Marshall had indicated to the Executive Board, catching up would require considerable effort.

In scanning the seven issues produced in this time frame, three were found to be special issues. No other special issues appeared during the remainder of Marshall's editorship. Conceivably these three special issues were part of the effort to correct the production lag and compensate for the lack of acceptable manuscripts in these early years of the journal. Possibly, they were part of the "more organized" solicitation effort Marshall referred to in his March 1964 report to the Executive Board.

Special Issues

Regardless of whether the special issues of Volumes 2 and 3 were an effort to alleviate the production lag or simply an attempt to share information of possible interest to NARST members, they were the first such issues in JRST's history. Since the publication of JRST began in May of 1963 through to December 1990, there has been 27 volumes, 166 issues produced. Of these, 8 have been designated as special issues (Appendix G-1): 2:3-4 (1964), 3:2 (1965), 11:3 (1974), 20:5 (1983), 24:4-5 (1987), and 27:10 (1990).

Three of the eight special issues fell under the editorship of JRST's first editor, J. Stanley Marshall, and were published in a time

span of less than one year. The first special issue of JRST, Volume 2:3, was "devoted to a series of papers from a conference on developmental psychology built around Professor Jean Piaget."⁴⁴ The conference held at Cornell University, March 1964, had been arranged by Cornell NARST member, Verne N. Rockcastle. Editor Marshall in his introduction to the Piaget issue interjected that

[t]his is a remarkable thing Dr. Rockcastle has done, and he and his colleagues at Cornell deserve a special tribute from the science education fraternity for doing it. Piaget has been known to reject invitations for similar meetings from distinguished individuals and groups in many countries. But Rockcastle has divulged his secret: one simply goes to Geneva, walks up to Piaget's front gate, and says, "Bonjour, Professor Piaget."⁴⁵

The second special issue was found in the same volume as the first and followed in succession as Issue 4. The content of this issue was a series of reports of the summer curriculum production projects. Invitations had been sent to directors of projects, such as the Earth Science Curriculum Project (ESCP).⁴⁶

As for the third and final special issue falling within Marshall's term as editor, its content was devoted to articles describing secondary school teacher education programs.⁴⁷ Fittingly the Guest Editorial for this special issue was written by the 1965 president of NARST's Journal affiliate, the Association for the Education of Teachers of Science. The editorial by AETS president, Ralph W. Lefler, was entitled "A Charge to the AETS."⁴⁸

By the time the fourth special issue was published, AETS was no longer affiliated with the Journal, and JRST's fourth editor was in the midst of finishing his fifth and final volume. This fourth JRST editor was O. Roger Anderson of Teachers College, Columbia University.

The guest editor for this 1974 special issue, Volume 11:3, was Robert G. Bridgham of Stanford University.

The theme of the issue and the title for the lead article were the same--"Methods in Research in Science Education." In the introductory article Bridgham wrote:

A chronic problem of research in science education has been our failure to "preserve enthusiasm." Not enough of us, it has been noted, generate any research beyond that done in the doctoral dissertation. The individuals who were invited to contribute to this issue have developed or helped to develop particular lines of research in science education. Their comments help remind us that research in science education can lead to "conquests" that encourage the investigator to continue his work.⁴⁹

The interlude between the 1974 special issue from which the preceding quote was taken and the next special issue (Volume 20:5) was approximately nine years. At this time James A. Shymansky of the University of Iowa was editor of JRST. The articles for this 1983 issue pertained to meta-analysis and were compiled by Ronald D. Anderson of the University of Colorado. They reported "the result of a multi-institutional project directed by Professor Anderson. . . . In all, more than 3000 research reports in science education were reviewed in this project."⁵⁰

Russell H. Yeany of the University of Georgia, the individual who completed the preliminary manuscript review for the preceding special issue, became the seventh Journal editor. Under his five-year term, two special issues entitled "Cognitive Consequences of Technology for Science Education" appeared as the April and May 1987 issues of Volume 24. Marcia C. Linn of the University of California at Berkeley

was guest editor for these issues. In her editorial comments, Linn indicated that Apple Computer sponsored

a kick-off dinner for these issues at the National Science Teachers Association meeting in April, 1986. Apple invited all individuals presenting papers at NSTA on technology and science education to attend the dinner. . . . [A]ttendees [were inspired] to expand their view of the potential of technology for science education. Many of the individuals whose papers are in these issues attended the event.⁵¹

The previous two issues on technology occurred in 1987. The eighth special issue, "Perspectives on Concept Mapping," was the last issue of 1990 (Volume 27). It fell under the editorship of the eighth editor of JRST, Ronald G. Good of Louisiana State University, Baton Rouge, Louisiana. Co-editors for this 1990 issue were Joseph D. Novak of Cornell University and James H. Wandersee, a visiting scholar at Louisiana State University. Novak was selected as editor for this special issue because of his central role in the development of concept mapping as a tool for science education research and practice. Primarily for this role "he received NARST's highest recognition for research achievement, the Distinguished Contributions award."⁵²

This eighth special issue was distinctive even beyond its content. One reason was that it "is the first of a series of special issues edited by the JRST Associate Editors and their colleagues."⁵³ Each of five associate editors "will organize one special issue during the 1990-'95 term."⁵⁴ Paper calls for two upcoming issues within the series were announced in the 1990 volume, Issues 6 and 7, and in the September 1990 NARST News. The Fall 1991 special issue was announced to be "The Research Issues of Science Curriculum Reform," edited by Associate Editor James A. Shymansky and colleagues, William C. Kyle,

Jr. and Deborah Muscella.⁵⁵ The theme for the 1992 issue is "Students' Models and Epistemologies of Science," edited by Associate Editor Marcia C. Linn and colleagues, Nancy Songer and Eileen Lewis.⁵⁶ For Linn, the 1992 issue will be the third special issue for which she has served as editor. The remaining two associate editors of special issues are Rodger W. Bybee of Colorado College, BSCS, Colorado Springs, Colorado and Anton E. Lawson of Arizona State University, Tempe, Arizona. Information pertaining to the themes for their 1993 and 1994 special issues was not yet announced.

An additional reason that the eighth special issue was distinctive was that it represented an expansion in the Journal. This Journal issue (Volume 27, Issue 10) was the first issue 10 published for JRST. Nine issues had been the previous volume size. In addition, this special issue was the largest issue produced in the 28 years of JRST's publication. Its pages totaled 158. The only other issue exceeding 150 pages was Volume 15, Issue 6. However, this issue had been large to compensate for Volume 15, Issue 3, which contained only 52 pages (Appendix G-1).

Affiliate Leaves

The third special issue of JRST was of particular interest to members of NARST's Journal affiliate, AETS. Its content had been devoted to secondary school teacher education programs and the guest editorial had been written by the 1965 AETS president.

The relationship of NARST and AETS as co-affiliates had spanned two journals and 21 years. During the last eight years of NARST affiliation with Science Education (1954-1961), AETS was one of the

co-sponsors. The third organization was CESI. When NARST severed relations with Science Education, AETS did the same. However, CESI maintained Science Education as its official journal through Volume 48:4 (1964),⁵⁷ at which time the group affiliated with Science for Children. This meant that both CESI's (1932-1964) and NARST's (1929-1961) affiliation with Science Education, encompassed a span of 33 years.

When NARST and AETS disassociated from Science Education, they did not affiliate with an existing publication, as did CESI. Instead of a new affiliation, NARST's leadership launched a new journal. The members of AETS, approving of NARST's new venture, voted to affiliate with the new research journal, JRST.

In accommodation of this new affiliation,

[d]ues of all [AETS] members who were not also members of NARST was raised from \$4.00 to \$10.00. [This raise allowed these] members [to] receive a subscription to The Journal of Research in Science Teaching.⁵⁸

The subscription rate for AETS members remained at \$6.00 at least through 1968.⁵⁹ Records were not found for later years. However, the AETS-JRST affiliation continued through the publication of Volume 11:1 (1974), at which time AETS again affiliated with Science Education.⁶⁰

After the editor-owner of Science Education, Clarence M. Pruitt, died in August of 1968, his wife tried, without success, to sell the publication to some of her husband's NARST colleagues. Two of the several colleagues approached included Clarence H. Boeck of the University of Minnesota⁶¹ and George G. Mallinson of Western Michigan University.⁶² Since these and other NARST members were not

interested in purchasing Science Education, Mrs. Pruitt sold the publication to John Wiley & Sons, Incorporated, before the end of 1968. Within the next year or two, AETS began negotiations with John Wiley & Sons⁶³ that ultimately led to the second AETS-Science Education affiliation and the culmination of the AETS-JRST affiliation. In 1973, "AETS became the sponsor of Science Education."⁶⁴

Double-Year Publication

By the time AETS left JRST, the Journal was beginning its twelfth year of publication but only its eleventh volume. The reasons for this lack of synchronization occurred during the production of Volume 5.

In 1966, Marshall, the editor of the first four volumes, "asked to be relieved of the editorship of JRST because of the press of administrative duties."⁶⁵ He had just recently been promoted to the position of Associate Dean of the College of Education, Florida State University.⁶⁶ In the Winter 1967 Newsletter, Marshall was "commended for his leadership in the establishment of the Journal and for . . . [helping it] achieve a very respected position in the field of professional journals."⁶⁷

Marshall's resignation began the search for a new editor, a search which ended with the appointment of H. Craig Sipe of George Peabody College for Teachers.⁶⁸ Sipe was also the 1967 NARST president.

Since Marshall's editorship culminated with Volume 4, Sipe's duties began with Volume 5. Although not identified as such on the

inside cover of Volume 5, the associate editor appointed to assist Sipe was Sidney Rosen of the University of Illinois.⁶⁹

Examination of Volume 5, reveals that its publication spanned two years, 1967 and 1968. A perusal through NARST newsletters revealed that NARST members did not receive any issues of Volume 5 during 1967. Several factors contributed to the publication delays. Sipe, for instance, was working

under the handicaps associated with three moves, from Ohio State University where he was on leave, back to George Peabody College and finally to State University of New York at Albany where he [was] now professor of science education.⁷⁰

In addition to the moves, Sipe had "heavy commitments and limited support available from the universities with which he had been associated."⁷¹ Another problem was the inadequate "volume of acceptable manuscripts."⁷²

In spite of these obstacles, Sipe, in 1967, "did send to the publisher two issues of Volume 5."⁷³ The officers of NARST had anticipated that one issue would be mailed before the holidays, "but John Wiley and Company . . . had delays in their printer's schedule."⁷⁴

As a result of the moves, heavy commitments, limited support, low volume of acceptable manuscripts, and printer delays, publication dates had not be met. The actual publication schedule for the problem-laden Volume 5 was presented to the membership in the Spring 1968 NARST Newsletter. Issue 1 of JRST had been mailed in the winter. Issue 2 was in the press and expected to be mailed soon. Galley proofs for the third issue were completed and the manuscripts for the fourth issue were being processed by Sipe. The writer went on to

inform NARST members that "Volume 5 is the 1967 volume, and therefore members who joined NARST after January, 1967 have not received any issues of the Journal."⁷⁵ He further stated that plans for Volume 6 (the 1968 volume) were underway, and that by late 1968, the journal publication schedule should "be almost up-to-date."⁷⁶ The concluding comment to members was that "[t]he Executive Board has recommended that all members in good standing receive both Volumes 5 and 6, regardless of the date of their admission."⁷⁷

As for Volume 6, it was not published in 1968 as hoped. In response to what had occurred with the previous volume, John Wiley

planned to publish the journal on a per issue basis with four issues per volume, but without a commitment to publication of one volume each calendar year. [However, if] . . . the volume of acceptable manuscripts increases, a schedule of four issues per year may be resumed.⁷⁸

The four-issues-per-year schedule was resumed in 1969 with Volume 6. In the Spring 1969 NARST Newsletter, the following schedule of three-month intervals was presented for Volume 6:

Issue 1	March 1, 1969
Issue 2	June 1, 1969
Issue 3	September 1, 1969
Issue 4	December 1, 1969 ⁷⁹

In preparation of this volume the editor and staff reviewed 97 manuscripts. Of this number 26 were accepted, 11 were accepted with revisions, 28 were rejected, and 32 remained under consideration.⁸⁰

Manuscript Review

Obtainment of quality manuscripts and review of manuscripts remained a challenge and contributed to production lags throughout the terms of early editors. In referring to the production of Volume 3,

Marshall spoke of "the new Editorial Advisory Board." Seven of these individuals were new to the group. Additionally, this new Board consisted of 12 members, besides the editor, an increase of 3 over the previous Board. Marshall shared that "[the] decision to expand the Board is based on our wish to reduce the individual Board member's work load of reviewing manuscripts."⁸¹

The expansion in Marshall's editorial board was the first increase of JRST Board members. Generally, for the same reason Marshall stated and "to decrease the time lag between submission of and action on an article,"⁸² the number continued to rise through 1984. In the December 1982 NARST Newsletter, JRST editor, James A Shymansky (1980-1984), reported:

that the expanded editorial board is now able to provide more extensive reviews of manuscripts and much quicker turnaround times for authors. In the past year, 475 of the submitted manuscripts were viewed as acceptable for publication. (The acceptance rate in recent months has been closer to 30%.)

From 1985-90 the number increased and decreased within the range of 25-32 members. For a summary of these changes see Table 3.

In several of the publication years, additional reviewers beyond that of the Editorial Board were utilized for special issues, a particular topic, and to offset the workload, especially as the flow of manuscripts increased. In Volume 19:9, for instance, Editor Shymansky extended a special note of thanks to 43 additional reviewers.⁸³

Similar expressions of appreciation to reviewers have probably been extended by every editor preceding and following Shymansky. In a

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Table 3 (continued)

Year & vol. no.	Iss. per vol.	Pgs. per vol. & ave./iss.	Affil.	Associate editors	Editor Associate editors	No. of Ed. Bd. members	Nonmember & member sub. cost	Foreign postage cost
1972 (9)	4	392 (98)	AETS	O. Roger Anderson, Ed. J. W. George Ivany	Maurice Belanger, Book Review Editor	15-16	\$10.00 (\$8.00)	\$1.00
1973 (10)	4	390 (97.5)	AETS	O. Roger Anderson, Ed. J. W. George Ivany (Issues 1 & 2) Richard Hansen, Book Review Editor (Issues 2-4)	Maurice Belanger, Book Review Editor (Issue 1)	16	10.00 (8.00)	1.50
1974 (11)	4	378 (96)	AETS (Iss. 1)	O. Roger Anderson, Ed. J. W. George Ivany Richard Hansen, Book Review Editor	Robert E. Bridgham - Special Editor (Issue 3)	16	20.00 (10.00)	3.00
1975 (12)	4	464 (116)	None	David P. Butts, Ed. William Zeitler	Richard Hansen, Book Review Editor	16	24.00 (11.00)	4.00
1976 (13)	6	592 (98.7)	None	David P. Butts, Ed. William Zeitler	Richard Hansen, Book Review Editor	16	30.00 (13.00)	6.00
1977 (14)	6	584 (97.3)	None	David P. Butts, Ed. William Zeitler	Richard Hansen, Book Review Editor	16	30.00 (15.00)	7.00
1978 (15)	6	584 (97.3)	None	David P. Butts, Ed. William Zeitler	Richard Hansen, Book Review Editor	17	30.00 (15.00)	7.00
1979 (16)	6	582 (97)	None	David P. Butts, Ed. William Zeitler	Richard Hansen, Book Review Editor	18	38.00 (15.00)	10.00
1980 (17)	6	606 (101)	None	James A. Shymansky, Ed. John E. Penick		18-17	38.00 (17.50)	10.00

Table 3 (continued)

Year & vol. no.	Iss. per vol.	Pgs. per vol. & ave./iss.	Affil.	Associate editors	Editor Associate editors	No. of Ed. Bd. members	Nonmember & member sub. cost	Foreign postage cost
1981 (18)	6	582 (97)	None	John E. Penick	James A. Shymansky, Ed.	24-2	\$45.00 (20.00)	\$11.00
1982 (19)	9	816 (90.7)	None	John E. Penick	James A. Shymansky, Ed.	22-28	68.00 (30.00)	21.00 sur. 78.00 air
1983 (20)	9	889 (98.9)	None	John E. Penick	James A. Shymansky, Ed.	28-29	68.00 (20.00)	21.00 sur. 78.00 air
1984 (21)	9	965 (107.3)	None	John E. Penick (Issues 1 & 2)	James A. Shymansky, Ed. Russell H. Yeany (Issues 3-9)	28-30	75.00 (20.00)	29.00 sur. 108.00 air
1985 (22)	9	853 (94.9)	None	Joseph P. Riley	Russell H. Yeany, Ed.	30-28	82.00 (20.00)	32.00 sur. 119.00 air
1986 (23)	9	864 (96)	None	Joseph P. Riley	Russell H. Yeany, Ed.	28-25	90.00 (20.00)	37.00 sur. 140.00 air
1987 (24)	9	840 (93.3)	None	Joseph P. Riley	Russell H. Yeany, Ed.	25-27	96.00 (20.00)	43.00 air
1988 (25)	9	790 (87.5)	None	Joseph P. Riley	Russell H. Yeany, Ed.	27-26	104.00 (20.00)	45.00 air
1989 (26)	9	832 (92.4)	None	Joseph P. Riley	Russell H. Yeany, Ed. Ronald G. Good, Ed.-Elect (Issues 5-9)	26-28-27	119.00 (30.00)	70.00 air
1990 (27)	10	1,080 (108)	None	James H. Wandersee (also visiting scholar) Associate Editors--Special Issues Rodger W. Bybee (199_) Joseph D. Novak (1990) Anton E. Lawson (199-) James A. Shymansky (1991) Marcia C. Linn (1992)	Ronald G. Good, Ed.	26-32-30	145.00 (30.00)	85.00

reference to retiring members from JRST's first editorial board, Marshall affirmed

I should like to express here my thanks . . . for their hard work and for their devotion to quality journalism. They tell me it was fun--and I am sure much of it was. But the time and toil they put in could have been spent in doing other things for personal pleasure and profit. The gratitude of NARST . . . is also expressed.⁸⁴

These words, or very similar words, conveying appreciation for efforts of retiring Board members, could probably be reiterated by every editor in JRST history.

Additionally, Marshall described for NARST members the procedures the Editorial Board followed for processing manuscripts received for publication.

Upon receipt of a manuscript, the Editor examines it for applicability, format, etc. After this preliminary review, papers are forwarded to one of more of the members of the Editorial Board for critical scrutiny and comment. Upon receipt of the Editorial Board's comments, the Editor reviews each article a second time, makes final decision as to the acceptability for publication, and forwards accepted, edited manuscripts to Wiley for processing and inclusion in the Journal.⁸⁵

In an attempt to illustrate to NARST members "the way members of the Editorial Advisory Board think and . . . the thorough and deliberate job they generally do in reviewing manuscripts,"⁸⁶ Marshall selected several comments to share from his files. He also hoped to provide insight into the job of being editor and into the problems encountered reviewing manuscripts. The following are excerpts from Marshall's report to NARST members:

This one reflects the concern of a reviewer who does not want our Journal to be guilty of "me-too-ism."

A similar article ran last year, I believe in, _____. We shouldn't run one like it.

Here are several which are marks of a perceptive, alert reviewer.

Not a research article--it borders on a type of hearsay documentation . . .

This is largely an exercise in statistics, superimposed upon a faulty design and dealing with very small subgroups. . . .

The subject matter is gathered from secondary sources, the remarks are trite, working within no tight context of criteria. . . .

This one may show some impatience but note the reviewer's attention to detail.

The article as written is not acceptable to me as ready for publication. The writing style and the grammar are sloppy. It is disorganized and provides no logical development from the problem to the procedure to the result. It is quite skimpy in providing sufficient information for replication or verification by interested readers. It seems to have been taken from a much longer and more thorough report and just tacked together for a quick article.

And finally, consider the simple elegance of these two.

On the whole, knowledge seems to have been advanced practically not at all by this study.

To be quite honest I don't understand the d___ thing.⁸⁷

Throughout JRST's 28 years, comments such as the preceding have probably surfaced many times as reviewers strive to maintain a quality journal. A summary of manuscript acceptance and rejection information published in NARST Newsletters appears in Appendix G-4.

Editors (1969-1990)

Maintaining a quality journal was imperative to members of NARST. The experiences and frustrations of the first two editors of JRST increased the Executive Board's sensitivity to the fact that

no one individual can assume the enormous responsibility for the work unless he is supported by excellent university facilities and closely cooperating colleagues at his institution.⁸⁸

Sipe had asked to be replaced as editor because of his "limited support" and "heavy commitments."⁸⁹ Marshall requested to be relieved because of the "press of administrative duties."⁹⁰ Both individuals faced the challenge of an inadequate flow of acceptable manuscripts, and both editors had difficulties meeting publication deadlines.

Marshall, just having retired from the editorship, presented at the 1967 Annual Meeting in Chicago a paper entitled "Publishing as a Professional Contribution in Science Education." Near the end of this paper, he reported:

I am aware that the membership has had some complaints about the editorial responsibilities during the past five years--and not without some cause. I will not claim that some of the delays in production were not due to preoccupation with the job for which I am paid at Florida State University. But a large part of the problem was related to the conditions in which manuscripts were received. Thus I hope that the following comments may have the effect of tightening up the operation a bit under your new Editor and hopefully of keeping the publication more nearly on schedule.⁹¹

Marshall then went on to quote some concerns that his reviewers had recorded about various manuscripts submitted. Following the sharing of these quotations, Marshall raised the question of the payment of a stipend to the Journal editor.

I have found it sometimes to be uncomfortable and embarrassing to turn my back on pressing University work in order to meet one of the Journal deadlines. If the editor were given a stipend enabling him to take some time, even two or three days a month, to devote to Journal work and that only, it might be a much more satisfactory arrangement. Whether the Association is in a position to afford this at the present time, I do not know.⁹²

With the experiences and comments of the first two editors in mind, a committee under the chairmanship of Fletcher G. Watson commenced the process of selecting the third JRST editor. The NARST

funds for supporting the office of the editor-to-be were budgeted at \$3000--double that of the preceding editor (Table f-2). The charge from the Executive Board was

to locate an editor who would have at least one colleague at his institution who would participate with him in the editorial work, the editor's university would provide the equivalent of half-time secretarial assistance and necessary support facilities, the editor's responsibilities would be recognized as part of his professional commitment at the university, and if possible, close liaison with our publisher, John Wiley, would be facilitated.⁹³

James T. Robinson (1969)

The result of Watson's search committee was the recommendation that James T. Robinson of Teachers College, Columbia University, be named editor. In addition, the appointment of five associate editors was advised. Four of the designated associate editors, also from Teachers College, were O. Roger Anderson, J. W. George Ivany, Pauline Gratz, and Mary Budd Rowe. Gratz and Rowe were the first women to serve in editorial board positions. As for the fifth individual, the committee recommended retainment of former associate editor, Sidney Rosen, as the book review editor.⁹⁴

James T. Robinson, in reality, ended up serving the shortest term of any of the eight Journal editors from 1963-1990. Nevertheless, he and his editorial board were responsible for re-establishing regular publication of the Journal after the problems encountered with Volume 5 (1967-68). The result of their effort in producing Volume 6 (1969) was the regular three-month-interval publication schedule--March, June, September, and December--announced in the Spring 1969 NARST Newsletter. Although Robinson's name appears on all four of these 1969 issues, he only served as editor for the first two. A notation

in the third issue indicated that he was on leave from Columbia for the 1969-1970 academic year and had asked Associate Editor O. Roger Anderson to serve as editor during his absence.⁹⁵

O. Roger Anderson (1969-1974)

Anderson did serve, but his editorship did not end with these issues. Robinson resigned, and Anderson was appointed editor. The apparent reason for Robinson's resignation was his relocation to the University of Colorado, Boulder, Colorado.⁹⁶ However, throughout the 1970-1971 academic year, Robinson remained affiliated with the Journal as an associate editor.⁹⁷

At the Fortieth Annual Meeting (1967), a resolution was passed stating that the appointment of Journal editor would be reviewed at five-year intervals.⁹⁸ After adoption of this resolution, neither of the first two editors appointed completed a five-year term. Both H. Craig Sipe and James T. Robinson resigned. Thus, O. Roger Anderson was the first JRST editor to complete a full term. However, because of Robinson's leave of absence, Anderson actually served more than five years, according him the longest editorship in JRST's history. During his service as editor, another resolution was passed that actually limited the term of JRST editor to five years.⁹⁹

Having served as a JRST editor, Anderson was asked to respond to a "NARST History Questionnaire." Within one of his responses, he listed three goals he had set for his term as editor. Two of the three goals dealt with the review of manuscripts:

- A. To establish a clear set of criteria and a coherently organized policy for rendering decisions on acceptability of manuscripts.

B. To establish a more tightly knit communication system among the Editorial Board Members to ensure consistency in manuscript review and to share ideas toward improvement of policies and procedures.

His third goal was

C. To encourage more theory-based research and carefully designed research strategies as a way of improving the quality of the Journal and encouraging a broader readership.

Anderson felt that each of these goals were achieved to a degree.

Another question asked what the major science education research emphasis was at the time he was editor. Anderson responded as follows:

The field was moving toward more psychological-based research. This included increasing emphasis on Piagetian theory, stimulus-response theory and contributions from cognitive psychology, though the latter had emerged more strongly in recent years. Major thrusts were being made toward more precisely designed experimental studies while concomitantly explorations were being made into the philosophical and logical issues involved in qualitative and observational research strategies.

In 1971, renewal of the JRST publication contract with Wiley became an important concern. Most discussions revolved around financial matters. The following is a quotation from the Fall 1971

NARST Newsletter:

The total cost of producing JRST, to John Wiley Publishers, is approximately double the income received from total sales. The causes of this discrepancy between expense and income are several, including continued increases in cost of production, and for 1971 a small number of member subscriptions (600) to the Journal . . . In order to just meet total production costs, assuming the present number of subscriptions, the annual rate for JRST would have to be raised from six dollars to ten dollars for members, and from ten dollars to fifteen dollars for non-members. These increases are not quite double present subscription rates because Wiley projects some continued increase in income from the sale of back issues.¹⁰⁰

The dues for NARST were increasing from \$10.00 to \$15.00 in January of 1972. If \$10.00 of the dues were to go to the journal, the

budget revealed that NARST would be in a difficult financial situation. Adequate funds would not even be available to pay the expenses of the editor's office. When Anderson had assumed the editorship, NARST support for the editor's office stood at \$3000. In 1971 these funds were budgeted at \$4500 (Appendix G-2).

Thus, a strong desire existed to keep the member subscription rate to \$7.00. Efforts were launched to increase the number of member and non-member subscriptions and reduce production costs.

To reduce production costs, the following procedures were adopted: bold type usage, photocopy-ready manuscript tables, and single-column-page journal format. Subsequently, Volume 8 was the last of the double-column format, and Volume 9 was the first of the single-column format. Additionally, Volume 9 was the first time the "Contents" was printed on the back cover instead of the front.

One directive, related to subscription numbers, was for NARST secretary-treasurer, Ralph W. Lefler, to determine where the discrepancy occurred between the 600 NARST-member subscriptions reported and the nearly 900 paid 1971 NARST members. This was Lefler's sixth month of office after succeeding T. Wayne Taylor. Correspondence filed in the NARST Archives and information shared by members indicated that there had been some record-keeping problems during Taylor's term of office. Possibly, this was part of the discrepancy. Several members complained about not getting their subscriptions. Information in the Archives indicated that Taylor's record-keeping problems were compounded by an office move, NARST's

rapidly rising membership, his declining health, and a tragic loss of a son.

Some of the efforts to resolve problems related to record-keeping, finances, distribution, and manuscript review must have been successful. In 1973, NARST voted approval to continue the relationship with John Wiley and Sons as publisher of JRST. By 1974, the year of Anderson's retirement from the editorship, the NARST-support portion for the editor's office was able to be reduced from \$4,942 in 1973 to \$2,500. Possibly, some support was coming from the incoming editor's resources. Additionally, at the April 1974 Executive Board meeting, out-going Editor Anderson reported that enough JRST manuscripts had been accepted to satisfy requirements into 1975. Anderson attested that high quality manuscripts and active reviewers were, in part, responsible for this positive publication status. He made a plea for maintaining a constant vigil with regard to quality of manuscripts for JRST.

David P. Butts (1975-1979)

This responsibility now fell to the new editor, David P. Butts, and his editorial board. The bylaws in place when Anderson assumed editorship did not include the JRST editor officially or unofficially as a member of the Executive Board. Butts would have the benefit of being a member of the NARST leadership team throughout his term of office--an asset to Butts, NARST, and JRST. This change in the bylaws had improved communication and cooperative involvement.

For his term as editor Butts identified two goals beyond maintaining a smooth working relationship with Wiley:

A. First--to assist a wider audience to develop skills in writing for scholarly journals.

(This I think we did have a degree of success in accomplishing through our strategy of editorial feedback to each potential author.)

B. Second--to provide a clearer link between research and science teaching.

(This I think we also accomplished by requiring each author to include a section in their paper which stated the explicit implications of the findings of their study for the appropriate audience of teachers or students.)

One of the changes instituted during Butts term of office was the utilization of "Research Reports" (Appendix G-1) limited to 10 pages of manuscript. The intent was to encourage publications of studies that were of more limited interest to the readers. These reports "also permitted some individuals to begin their contributions to scholarly publications who otherwise would have probably received a 'no thank you' letter."¹⁰¹

A second change was the approval of appointment of members to the JRST Editorial Advisory Board through direct action of Executive Board rather than through the Publications Committee. This was one change that had probably been facilitated by the fact the JRST editor was now considered part of the NARST leadership team.

A third significant change was the expanding of JRST from a quarterly publication to a bi-monthly publication. The first six-issue volume occurred in 1976 (Volume 13).

At the time Butts became editor in 1975, the budgeted NARST support was to have been \$3,000 for the editor's office (Appendix G-2). However, the University of Georgia, Butts' institution of employment, provided the necessary services at no cost to NARST.

Additionally, in 1975, the first report of JRST circulation appeared in the journal. According to Wiley's report to the U.S. Postal Service, 25 September 1975, the average number of copies per issue for the preceding 12 months was 1,926 (Appendix G-3). From 1975 through 1990, the lowest and the highest reported averages for copies per issue both occurred during Butts' term as editor. Two years tied for the high, 1976 and 1979 with 2,102. The low of 1,434 was recorded in 1977.

Butts recalled that most papers published in early issues of his editorship dealt with analysis of classroom discourse through the use of interaction analysis or similarly designed schemes. However, "there came a distinct shift to papers dealing with Piagetian analysis of students concept development. By the end of my term, a third emphasis was seen in studies linking classroom learning to student, teacher and curriculum variables."¹⁰²

James A. Shymansky (1980-1984)

The end of Butts' term as editor came in 1979. Thus, the sixth JRST editor, James A. Shymansky, assumed the helm in 1980. During the 1979 transition year, NARST's support share for the editor's office was \$1,620. The institutional support of \$18,000 was split between Butts' institution, University of Georgia, and Shymansky's institution, University of Iowa (Appendix G-2).

In regard to additional JRST-related finances, President Renner reported in the June 1979 NARST Newsletter that "The assembling of the articles and reports that go into the JRST is free!" to members. The \$1200 per year required for that activity came from the royalties

NARST received from non-member subscriptions. As for the cost of delivering JRST to members, this was determined to be \$18.30 per year --\$17.50 in production and mailing costs and \$.80 for maintenance of membership lists and preparation of mailing labels. The dues in 1979 were \$26.50.

During the time the JRST editor's office was in a state of transition, apparently science education research was also. Shymansky stated that the research was leaving the Piagetian era and moving into the naturalistic/ethnographic research arena. Also seen was the start of concept change/formation research.¹⁰³

In keeping with what was occurring on the research front, Shymansky established one of his journal goals to be:

Expand the journal fare to include naturalistic studies and encourage researchers in related areas (philosophy, anthropology, reading, psychology, etc.) to share ideas.¹⁰⁴

Researchers outside science education were not only encouraged but often invited to publish in JRST. The special series called "Research Forum" (Appendix G-1) was an attempt to showcase outside researcher's ideas. The former "Research Paper" and "Research Report" headings were eliminated (Appendix G-1). Shymansky wrote in the September 1980 NARST Newsletter: "No effort will be made to discriminate between the types of scholarly papers submitted. All papers about research on science teaching are within the Journal's domain and are invited for review." In addition, Shymansky announced the beginning of the publication of abstracts. "All papers submitted for publication in the Journal must include a 100-200 word abstract. Abstracts will accompany all Journal articles in future issues."

A perusal through several naturalistic/ethnographic studies appearing in JRST, in the late 1970s and early 1980s brought with it the observation of the increased number of pages required to report this type of research. Many were double the length of previous years' research reports. Average lengths seem to run about 15-17 pages. This trend may have been a major contributing factor to the expansion of JRST in 1982 (Volume 19) from six to nine issues and thus from 600 pages to 900 (Appendix G-1).

Shymansky, as did most JRST editors, also had a goal tied to improving the overall quality of reviews (to help authors) and raising the quality of published articles. In an effort to move toward this goal and make acceptance and rejection more objective, the review process was opened. Authors now had access to full reviews.

Also occurring during Shymansky's term as editor was the negotiating of a new contract with John Wiley & Sons, Incorporated. This consumed considerable time and effort for several individuals during the first half of 1982.

The problems had been apparent to the officers of NARST.

First, Wiley was charging NARST \$30.00 per member for mailed copies of JRST based on vague contractual guidelines agreed to by NARST in 1967. . . . Second, Wiley essentially "owned" JRST because . . . the termination penalties outlined in our 1967 contract were so severe (e.g., apparently over \$34,000 for the year 1982 and as much as \$100,000 for the year 1987) that NARST realistically was at the mercy of Wiley. Nevertheless, it was considered a poor business practice to permit an external corporation to be in such a powerful position, especially considering the fact that Wiley currently owns and controls the other research journal in our area, Science Education.

To solve these crucial problems, the officers of NARST gave the executive secretary authority either to negotiate a new contract or to terminate our current contract with Wiley, to establish our own mechanisms for publishing JRST and to prepare for a legal battle in the New York State courts. . . .

The solution to these problems required NARST to employ . . . litigation lawyer, Robert J. Dwyer.¹⁰⁵

The results of the extensive efforts were that NARST became independent of any corporation and continued to have Wiley publish JRST. Wiley dropped the member-subscription cost from \$30 per year in 1982 to \$20 per year for contract years 1983-1987 (Table 3). Furthermore, Wiley agreed to provide NARST with the institutional subscription list for JRST far in advance of any termination with Wiley. Additionally, the termination penalties described in the new contract were reduced to \$6,300; a more attractive royalty plan was negotiated; Wiley agreed to keep NARST informed of promotional efforts; and a number other less important items were negotiated.¹⁰⁶

Russell H. Yeany (1985-1989)

Prior to the determination of the seventh editor of JRST, the September 1983 NARST Newsletter carried the announcement title "Six Highly Qualified Candidates Apply for JRST Editorship." The article that followed divulged that the applicants'

universities, in some cases, have promised to provide the candidates with one-third release time, half-time secretarial services, and complete coverage of operating expenses including postage, typing, photocopying and telephone charges. NARST is pleased with the fact that six institutions are willing to make such a significant commitment to NARST's journal.

From these six applicants, Russell H. Yeany was selected. Thus, the editorship of JRST again returned to the University of Georgia.

Yeany emphatically stated in a questionnaire response that "The role of the JRST is to stimulate and communicate the best research conducted in science education. The role is not to set the direction of that research." This function, he felt, was being fulfilled.

As JRST's seventh editor, Yeany, like most of his predecessors, had as one of his goals: maintaining and improving the quality of research presented in the journal. Additionally, he desired to broaden the type of research design and research questions published. At the end of his term of office, he felt the quality had been maintained and the research broadened.¹⁰⁷

The changes in policy Yeany highlighted from his term as editor both dealt with the manuscript review process:

We began to share reviews with authors and other reviewers.

We added a decision category to the review process that required a second review, by the initial reviewers, of any major revisions.

As for Yeany's response regarding what was occurring in science education research during the time of his editorship, he perceived methodology shifting to embrace qualitative and ethnographic studies. He stated that work was emerging on alternative conceptions and constructivist learning theory and that research on instructional technology became a focus.

Yeany's term as editor ended in 1989, but his leadership in NARST continued. In 1991, he was voted president-elect; and thus, in 1992, he became the fourth journal editor to have also served as president (Appendix D-1b). Other individuals having done so previously included: H. Craig Sipe, O. Roger Anderson, and David P. Butts. However, Sipe served as president prior to his term as editor.

Ronald G. Good (1990-94)

One change instituted under the new editorship was exceedingly obvious when the first issue of Volume 27 arrived. After 28 years of

green covers and dark print, JRST had a "new look." Its cover, predominantly white, displayed green print and an accompanying purple, green, and white geometric design. Although, probably not intentional, when the purple geometric pattern is examined, every letter appearing in the acronyms "JRST" and "NARST" can be formed.

In Good's introductory editorial for Volume 27, he wrote: "Serving as Incoming Editor during 1989 . . . I concentrated on reducing the time required for the review process and adding highly qualified researchers to the Editorial Board. I am pleased with the results of these efforts on both counts."

Other goals toward which significant progress had been made, by the time he responded to a "NARST History Questionnaire" in 1990, included increases in number of special issues, regular editorials, and guest editorials. To one goal he responded, "Time will tell." This goal was the desire to enhance the quality and reputation of JRST.

Additionally, for 1989 and 1990, his first years of editorship responsibilities, he identified what he felt to be the major research emphases in science education. These were knowledge states and conceptual development, classroom studies, and teacher education.

As the most recent editor of JRST, Good provided current guidelines and policy documents so that they could be compared to earlier versions of the same or similar documents. Thus, in Appendix H the following items are found: the 1963 (first) and 1990 version of "Information for Contributors;" the 1973 "Editorial Board Policy Statement," 1991 "JRST Editorial Process," and 1991 "Guidelines

for Reviewing Potential JRST Manuscripts;" and the 1978 (first) and 1990 version of the "Copyright Publication Agreement."

NOTES

¹Obourn, "'Sine Qua Non,'" 14.

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⁴Ibid.

⁵Ellsworth S. Obourn, "Prologue to the Future," Journal of Research in Science Teaching 1 (1963): 10-11.

⁶Ibid.

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰Ibid.

¹¹J. Stanley Marshall, "Editor's Report on Activities in Connection with the Journal of Research in Science Teaching," 21 February 1963, p. 1. NARST Archives.

¹²Ibid.

¹³NARST, "Tentative Inquiry Concerning Interim Support of the Journal of Research in Science Teaching," late 1963.

¹⁴NARST, "A Proposal to the Support of Scientific Publications Program of the Special Projects in Science Education Section National Science Foundation," Spring 1964.

¹⁵Joseph D. Novak, letter to Henry W. Riecken, 30 November 1964, NARST Archives.

¹⁶Cyrus W. Barnes, letter to Frederic B. Dutton, 3 July 1963, NARST Archives.

¹⁷Ibid.

¹⁸Ibid.

¹⁹Marshall, "Editor's Report on Activities," 2-3.

²⁰Ernest Burkman, memorandum to Editorial Advisory Board, 1 March 1963, NARST Archives.

²¹J. Stanley Marshall, "From the Editor," Journal of Research in Science Teaching 1 (1963): 2.

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²³J. Stanley Marshall, "From the Editor," Journal of Research in Science Teaching 1 (1963): 99-100.

²⁴J. Stanley Marshall, letter to Frederic B. Dutton, 5 June 1964, NARST Archives.

²⁵J. Stanley Marshall, "From the Editor," Journal of Research in Science Teaching 1 (1963): 197-98.

²⁶Jacqueline Mallinson, telephone interview with author, September 1990.

²⁷J. Stanley Marshall, "From the Editor," Journal of Research in Science Teaching 1 (1963): 287-88.

²⁸Ibid., 287.

²⁹Ibid.

³⁰Ibid.

³¹Marshall, letter, 5 June 1964.

³²George G. Mallinson, letter to W. E. Martin, 8 February 1965, NARST Archives.

³³Ibid.

³⁴NARST Publications Committee, "Purposes of the Journal of Research in Science Teaching," February 1965, NARST Archives.

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³⁷J. Stanley Marshall, "A Report to the Executive Board on the Status of the Journal," 20 March 1964, NARST Archives.

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³⁹Ibid.

⁴⁰Ibid.

⁴¹Ibid.

⁴²J. Stanley Marshall, "From the Editor," JRST 2 (1964): 1.

⁴³John H. Mason, ed., "Congratulations - Stan Marshall - Editor - Journal," NARST Newsletter (Fall 1965): 2.

⁴⁴Marshall, JRST 2, 1.

⁴⁵J. Stanley Marshall, "From the Editor," JRST 2 (1964): 165.

⁴⁶Marshall, JRST 2, 1.

⁴⁷J. Stanley Marshall, "From the Editor," Journal of Research in Science Teaching 3 (1965): 175.

⁴⁸Ralph W. Lefler, "A Charge to AETS," Journal of Research in Science Teaching 3 (1965): 95.

⁴⁹Robert G. Bridgham, "Methods in Research in Science Education," Journal of Research in Science Teaching 11 (1974): 169.

⁵⁰James A. Shymansky, "Editor's Note," Journal of Research in Science Teaching 20 (May 1983): 377.

⁵¹Marcia C. Linn, "Guest Editor's Comments," Journal of Research in Science Teaching 24 (May 1987): 401.

⁵²Ronald G. Good, "Editor's Note," Journal of Research in Science Teaching 27 (20 December 1990): 921.

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⁵⁴Ronald G. Good, "Report from JRST Editor," NARST News 31 (September 1989): 4.

⁵⁵"Call for Papers," Journal of Research in Science Teaching 27 (October 1990): 716.

⁵⁶"Call for Papers," Journal of Research in Science Teaching 27 (October 1990): 715.

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⁵⁸Jacobson, "AETS," 20.

⁵⁹T. Wayne Taylor, sec., "Annual Meeting," NARST Newsletter (Spring 1967): 2.

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⁶³Jacobson, "AETS," 23.

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⁶⁶Ibid.

⁶⁷Ibid.

⁶⁸Ibid.

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⁷¹Joseph D. Novak, ed., "New Editor Appointed," NARST Newsletter (Spring 1968): 1.

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⁷³Ibid.

⁷⁴Ibid.

⁷⁵Joseph D. Novak, ed., "Journal Publication," NARST Newsletter (Spring 1968): 1-2.

⁷⁶Ibid., 2.

⁷⁷Ibid.

⁷⁸Novak, "The Year in Review," 1.

⁷⁹"Journal of Research in Science Teaching," NARST Newsletter (Spring 1969): 2.

⁸⁰"Journal of Research in Science Teaching," NARST Newsletter (April 1970): 5.

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⁸²"Minutes of the Meeting of the NARST Board," NARST Newsletter (August 1972): 7.

⁸³James A. Shymansky, "Editor's Note," Journal of Research in Science Teaching 19 (December 1982): 718.

- ⁸⁴Marshall, JRST 3, 1.
- ⁸⁵Marshall, "Editor's Report of Activities," 1.
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- ⁹⁴Ibid.
- ⁹⁵O. Roger Anderson, ed., "Note," Journal of Research in Science Teaching, 6 (1969): 202.
- ⁹⁶Journal of Research in Science Teaching 7 (1970): Masthead page on inside of cover issues 1-4.
- ⁹⁷Ibid.
- ⁹⁸Taylor, "Annual Meeting," 3.
- ⁹⁹Wayne W. Welch, "Message from Wayne Welch, President, NARST," NARST Newsletter 15 (December 1973): 3.
- ¹⁰⁰Frank X. Sutman, "About the NARST Journal," NARST Newsletter (Fall 1971): 4.
- ¹⁰¹David P. Butts, letter to Paul H. Joslin, 25 February 1991.
- ¹⁰²Ibid.
- ¹⁰³James A. Shymansky, NARST History Questionnaire, 1991.
- ¹⁰⁴Ibid.
- ¹⁰⁵William G. Holliday, "NARST vs. Wiley Publishers," NARST News 24 (September 1982): 1.
- ¹⁰⁶Ibid., 2.

¹⁰⁷Russell H. Yeany, NARST History Questionnaire, 29 July 1991.

Chapter VIII

MEMBERSHIP

Introduction

Membership lists, meeting records, personal interviews, and questionnaire responses provided the information for this chapter. The spectrum of persons interviewed and/or receiving questionnaires included former NARST presidents, secretaries, research coordinators, and journal editors. Also included were other active members, emeritus members, graduate students, foreign members, and persons who had discontinued their membership. Although several items on the questionnaires varied, the items pertaining to membership were identical for all categories of former and current members. Such membership questions included the date joined, reasons for joining, why membership was continued or discontinued, involvement in the organization, and how a NARST membership had been personally beneficial. Responders, 117 total, included members who joined as early as 1928 and as recently as 1988. Several persons fell into more than one targeted-membership category. [Note: Responses from questionnaires are often quoted without the respondent being identified. If such information is needed, the questionnaires have been filed in the NARST Archives.]

Reasons for Joining

Most common among reasons for joining was the encouragement of advisors and colleagues. For example, Clarence H. Boeck, who joined

in the mid-1940s and became the 1961 NARST president, listed his first reason as: "A good sales job by Pruitt. We were colleagues at Oklahoma A and M College in Stillwater." His third reason stated that the "organization [was] recommended by Advisor Palmer O. Johnson, University of Minnesota, Minneapolis."

The other most frequent answers regarding reasons for joining could be categorized as professional interest in science education research, career enhancement, and personal growth. The following are four such examples of responses falling into these categories.

Paul E. Blackwood, the NARST research coordinator in the early 1950s, joined in 1949. He reported that

as a member of the staff of the U.S. Office of Education, it was incumbent on me, along with my colleagues there, to participate as members in the science education organizations that had national potential and impact. The science education specialists, of which I was one, saw an opportunity for service and also for keeping abreast of developments.

Another individual joining in 1949 was Thomas P. Fraser, one of the earliest black leaders in science education. He joined the Association "to assist in attaining national prestige [and] to demonstrate my capacity for leadership." By 1959, had Fraser accomplished a major portion of those goals as evidenced by his election to the presidency of NARST. Fraser was the first black president of the Association.

In the year Fraser succeeded to the presidency (1959), Harvey J. Goehring, Jr. became a NARST member. The three reasons he listed for seeking membership were

- a. To present summary paper of doctoral dissertation . . .

- b. To receive journal publications of latest science education research.
- c. To have available science education research data for my future teaching on university level.

Robert E. Yager, who became the 1975 NARST president, also joined in the late 1950s. The reasons he listed for joining the Association included his desires to "contribute to research in science education; communicate with others; [and] publish in JRST."

The preceding individuals were just four of several responding members who joined during the 1940s and 1950s. Many of these responders described NARST membership during these decades as being quite an honor. Part of the prestige was that the requirements and application process for membership were very strict. Persons, such as Fletcher G. Watson, who became highly regarded in the field of science education research, reported being rejected the first time their applications were presented to NARST during this time period. Another part of the prestige was that the "giants"¹ of science education were "numbered among its membership"²

One such "giant" who greatly impacted elementary school science was charter member Gerald S. Craig, 1936 NARST president. Craig was the only charter member still living at the time preliminary research for this study began. During his interview he recounted times prior to NARST when colleagues in science education research or curriculum development would congregate at various meetings to discuss ideas, concerns, new findings and approaches. Craig's particular interests centered on the learning of young children and the broadening of the elementary school science curriculum. He desired to change the elementary programs from merely nature study to a more inclusive

general science focus. Sharing his work and ideas in these areas, keeping abreast of other developments within the field, and promoting science education research, was important to Craig. Thus, he felt the significance of being involved in founding a science education research organization.

Craig's convictions about sharing ideas, promoting research, and keeping current in science education were similar to those of other NARST founders. Evidence from more recent members' responses, both quoted and unquoted, indicate that the reasons founders' had for becoming NARST members have remained high priorities for persons joining in subsequent years.

Reasons for Continuing

Reasons for continuing membership in NARST were often the same or analogous to those for joining. However, the two most frequent responses were in reverse order. For joining, people had been the number one reason and profession had been number two. In regard to continuing membership, colleagues were a close second; but the most recurring response was the member's past or current profession. As Wayne W. Welch, 1974 NARST president, phrased it: "I continued an active research program in science education and NARST is the premier organization for the field." Similarly, Milton O. Pella, 1966 NARST president, responded "NARST was where the research action in science education was and I was a part of that action."

Besides having similar responses, additional coincidences became apparent when the questionnaires of these two NARST presidents were further scanned. Pella, University of Wisconsin, had been the

doctoral advisor and sponsoring NARST member for Welch. Additionally, Welch had joined in 1966, the year Pella was president. Pella, likewise, joined the year (1948) his advisor and sponsor, Ira B. Davis, University of Wisconsin, was president.

Students of NARST members, as in the case of Welch and Pella, appear to have been the main source of new members throughout most of NARST's history. Some members even listed the opportunity for their students to present research as one reason for continuing a NARST membership.

Providing an opportunity for their graduate students was just one of the profession-related reasons that appeared within members' responses. Several others were listed. In descending order of frequency, the most common reasons were as follows: relevance to profession, interaction with colleagues (annual meetings and committees), publication of the journals, means for keeping up-to-date (journal and annual meetings), outlet for research (journal and annual meetings), professional development, promotion of research perspective, resource material for teacher education courses, contact persons in the U.S. and foreign countries, and newsletters.

As previously indicated, the opportunity to interact with colleagues in science teaching research was the second most common reason for continuing a NARST membership. Regardless of the decade in which members joined, this reason appeared consistently within the responses, often in conjunction with the annual meetings.

Members joining prior to the late 1950s commonly interjected feelings of camaraderie when they addressed the interaction with

peers. Several factors seemingly contributed to the strong sense of fellowship during these earlier years of NARST: Far fewer individuals produced the research; the membership numbered less than one-sixth to one-third that of the 1970s and 1980s; and annual meetings were small enough that everyone met together. The following are a couple of the responses that referred to such collegueship.

The first individual quoted is Herbert A. Smith who joined in 1948 and became the 1962 NARST president:

I thought the meetings were stimulative and the opportunity to socialize and spar over issues in face to face settings was an invitation to grow professionally. I made some life-long friends through NARST meetings, some with whom, I still correspond.

The second response is that of Nathan S. Washton who joined in 1950 and became the 1958 NARST president.

When NARST was small, our membership would get together with their families and visit each other. There would be communication with each other throughout the year--writing, telephone, and visits to campus and home. I shall always remember splendid talks with George Mallinson, Wm. VanDeventer, Clarence Boeck, Vaden Miles, Clarence Pruitt, Tom Fraser, Ed Weaver, Waldo Blanchet, Willard Jacobson, etc., etc.

Listed nearly as often as interaction with peers was another key motivator for maintaining a NARST membership, the publication of the journals--JRST (1963-), mentioned by most members, and Science Education (1929-1961), mentioned by a few earlier members. Former JRST editor, James A. Shymansky, succinctly summarized the predominant responses regarding the journals when he described JRST as "the forum to express and read current ideas." This opportunity to publish and keep abreast of recent research was a repeated theme in members' responses regardless of whether answers pertained to joining, continuing in, or benefiting from NARST.

The most prevalent reasons for continuing a NARST membership have been presented. Below are member responses not specifically included in the preceding:

Recruiting teachers

For 10 years I was editor of Science Education.

Prestige

This organization was the one I contributed to most and which gave me greatest satisfaction.

It has always given me some stimulation in looking at science teaching--at its broadest--with the critical eye of the researcher.

Membership's regard for me shown through electing me president

Reading articles authored by members I knew

Meeting the officers of NARST

Good size (300-400 [members])

Benefits

Persons, who continued NARST membership, listed on their questionnaires a variety of personal and professional benefits derived from being a member. Below are some of the benefits members recorded.

The first response is from N. Eldred Bingham who joined in the 1930s. He became the 1950 NARST president and succeeded Clarence M. Pruitt as editor of Science Education after Pruitt died in August 1968. Bingham shared on his questionnaire that

[n]ot only did the analytical aspects of the researches appeal to me, but the many others with practical uses. The meeting of the minds, the stature of the membership, and the committee work intrigued me. The concern for the gifted was stressed; Piaget's work.

Colleague support was a benefit listed by several members.

Sometimes it was mentioned because such support was lacking at a member's local institution. In other instances it was mentioned in conjunction with research efforts, textbook writings, or special projects. One example of such a response is that of Paul E.

Blackwood's:

Since I was doing national studies on science teaching in elementary school, I made continuous use of key NARST members to review questionnaire forms, give advice, and in other ways help in getting high percentage responses from the selected elementary schools in the studies. Also during the post-Sputnik period when the U.S. Office of Education supported the funding of curriculum development projects in science (often in cooperation with NSF), we used NARST members as judges in selecting projects for funding and for evaluating them in process.

A number of members referred to NARST as a source of motivation and encouragement. Ralph W. Tyler, who joined during the 1930s, related that NARST "helped to . . . instruct and motivate my own effort in life-long learning." Frank X. Sutman, who joined in 1956 and became the 1972 NARST president, conveyed how his membership had assisted him in revising and refining his approaches to teaching. He also indicated that it had "led to [his] interest in science for minority student populations." Rodney L. Doran, who joined in 1968 and became NARST's 1984-1986 research coordinator, shared that it gave him "confidence of [his] ability and perceptions . . . [and] the stimulation to keep 'R & R' (Researching and Riting)." The incentive to keep producing research was a benefit several members expressed.

Thomas P. Fraser (NARST's first black president) also talked about the Association being a source of inspiration, but additionally a source of pride. He interjected the prestige that had come from

"being elected to hold office" and how membership in NARST had "contributed to his professional advancement."

Certainly the opportunity for professional growth was a common theme among the responses. One of the more specific answers within this category was that of Jacqueline Buck Mallinson, who joined in 1952 and became one of the longest-active female members. She remarked that NARST:

[m]ade me aware of the meaning of "good," "bad" and "mediocre" research in science education; made me more aware of how to objectively criticize research techniques and findings; increased my ability to review written research in a concise fashion; increased my ability to present oral reports in a succinct fashion.

"Extremely good visibility in the field," as John W. Renner, the 1980 NARST president, phrased it, was another of the more frequent responses. Renner also spoke of the "excellent publishing vehicle (JRST) . . . [and] the opportunity to make a lot of good friends."

Other benefits, such as avenues for keeping up-to-date and obtaining material for teacher education classes, were identical to reasons for continuing membership. Pinchas Tamir (from Israel), who joined in 1970 and is one of earliest and longest-active foreign members, summarized remaining duplicate reasons in his response. He contended that NARST had been beneficial because it had provided him:

(1) An outlet for presenting research findings and opportunity to discuss research problems and issues. (2) A means for getting to know researchers in the field (3) A means for participating in annual meetings and becoming known among science educators.

Reasons for Discontinuing

Motivations for joining NARST and continuing membership have been identified, but this section presents reasons memberships were

discontinued. The dominant factor in continuing or discontinuing membership was the same--professional relevance. Change in job or professional responsibility was the most frequent response encountered. Sometimes promotions or total career changes were involved. Persons who had joined as graduate students often let memberships lapse once their studies were completed. Several of these people returned to a public or parochial school setting and felt other education organizations were more directly related to their current academic positions. Some mentioned that the costs of these organizational memberships and subscriptions was substantial and that persons needed to limit their affiliations.

Discussions of dues and how they affect membership have made repeated appearances in NARST meeting records. The Great Depression and World War II were two external influences that brought about several such discussions.

Paul DeHart Hurd, who joined in 1932, made this reference to his membership during those years:

The first time I dropped out of NARST occurred when I was teaching in high school. My limited income went to professional organizations that were more directly related to high school teaching, such as NABT.

Notable was how similar Hurd's comment about the 1930s was to a couple responses received from former graduate students of the 1980s who returned to the classroom.

A few of the older members mentioned health or retirement as the primary reason some individuals dropped their memberships. From the late 1950s through the early 1970s there seemingly was no membership category for recognizing retiring members. Honorary life memberships

apparently were no longer given and the emeritus category had not yet been established.

In any professional organization, dissatisfaction is certainly a cause of membership losses. During the late fifties and early sixties, several members were frustrated with circumstances involving NARST's first journal, Science Education. Details of the problems encountered, some of which led to membership losses, are found in Chapter VI.

Inaccurate membership lists have lead to discontent. One such time in NARST's history occurred about 1960-1961. It resulted because the outgoing secretary-treasurer, Clarence M. Pruitt, refused to transfer all the necessary records to the new secretary-treasurer, Herman R. Branson. A second such time was the period of rapid growth during the late 1960s to the early 1970s. Several persons were displeased about not receiving timely notification of membership acceptance and others were annoyed about not receiving their journals.

Two members from 1957 and three from 1963-1964 resigned, at least for a short time, because they felt the organization was dominated by a few strong personalities. In their descriptions of the annual meetings words such as "'old boys' organization," "battleground," and "bruised egos" were used. In addition, they were displeased with what one member described as "intimidation of younger professionals."

Paul DeHart Hurd, 1971 NARST president, expressed in his questionnaire very different reasons for the discontent that lead to his membership resignation:

[I] continued membership for about 40 years and discontinued for the reason that NARST was in a rut and failing to assume over-all

professional leadership for the advancement of science education and for falling behind the state-of-art in research methodology.

By request, Hurd elaborated upon this response in an

June 22, 1988, addendum to his questionnaire:

My recent disaffections with NARST are centered on their lack of leadership in dealing with the problems and issues associated with the national effort to bring about reform in science education. Part of this reason lies in their neglect of theoretical (philosophical), historical, sociological, and related types of research needed to develop a unifying concept of the place of science in precollege education and to give meaning to empirical studies. This year (1988) I chose to go to AERA for the very reason that these issues in science education could be seriously discussed. I was surprised at how much research in science education was being reported at AERA rather than at NARST.³

Hurd was not alone in his feelings about NARST. Other long-time members, one of which had been a graduate student of Hurd's, expressed similar frustrations with NARST.

Discontent can be good for an organization if it leads to betterment. Some of the frustrations and other reasons cited for causing membership losses ultimately resulted in organizational changes or improvements. For instance, membership records and subscription records became computerized. Because of time requirements and record keeping demands, the position of secretary-treasurer was replaced by a part-time executive secretary (Appendix D-1b). Problems of the fifties and early sixties with NSRST's editor-owned journal, Science Education, led to the 1963 launching of a NARST-controlled journal, JRST. Loss of retired members was partially solved by the official establishment of an emeritus membership category in 1978. Also initiated in the 1970s was regular membership status to any dues-paying person interested in belonging to the Association. The strict requirements and application process were

abandoned. As for concerns, such as those alluded to by Hurd, that pertain to NARST's role in science education and the research community, these issues are repeatedly being addressed by NARST leadership.

Categories

Through the years several categories of membership were developed. Some, such as associate membership or life membership, are no longer listed in the bylaws. Others have undergone significant changes. The following text summarizes many of the decisions pertaining to membership.

Charter Members

Accounts of the founders' meeting held in Cambridge, Massachusetts on February 27 and 29, 1928, vary in the reporting of the attendance of that meeting. The minutes of the meeting recorded that 15 attended Monday evening, February 27, and 11 participated Wednesday afternoon, February 29. As for total attendance, the exact number is unclear. Some sources state 16 and others, such as the summary letter found in Appendix B, record 17. Regardless of the correct number, 16 individuals who attended at least one of the two founders' meetings, paid the \$2.00 and became charter members of the National Association for Research in Science Teaching.

However, the number of charter members was not always 16, and did not stay 16. The individuals attending the Monday meeting voted that persons present and invited to attend should constitute the charter members. Since W. L. Eikenberry, the person responsible for calling

the founders together, sent out about 35 invitational letters, the number of charter members according to Monday's vote was about 36.

The total of 36 charter members was short-lived; on Wednesday, Monday's motion was rescinded. The new motion stipulated "that only those present at one or the other of the sessions of the Boston meeting shall constitute the charter members."⁴ This vote led to the 16 members who paid the dues becoming the charter members.

Although much longer-lived than the total of 36 charter members, the count of 16 was also ephemeral. At the Third Annual Meeting, February 24-25, 1930, a unanimous vote passed the following motion:

All persons whose names were on the original list to whom notices were sent of the meeting that was held in Boston and who responded favorably and subsequently paid dues for the first year should be listed as charter members.

The preceding motion established the number of charter members as 32. A complete list of these charter members is found in Table 1, Chapter II. The only person appearing on the list who was not a charter member is A. W. Hurd. In a commemorative address, "The Beginnings, Early Membership, and Early Activities of NARST," presented at NARST's Silver Anniversary Meeting (1952), charter member Ralph K. Watkins provided insight into NARST's founding and the activities and contributions of NARST's charter members. Watkins speech, as delivered to colleagues attending the 1952 Anniversary Meeting, appears in its entirety as Appendix I.

Watkins included Hurd among the charter members, making a total of 33. This number still leaves at least 3 people on Eikenberry's original invitation list who apparently chose not to join the new research organization; at least, not at that time. These 3

individuals were Davis, Goodell, and Mathewson. If this Davis was Ira C. Davis, he did become a member in the early 1930s. There was no lead as to whom Mathewson may have been. As for Frank E. Goodell, he was a high school teacher from Iowa who was actively involved in the Central Association of Science and Mathematics Teachers.

Eikenberry had originally summoned the science educators together to discuss the formation of a national council for science teachers. Instead, the result was the formation of a research organization. Goodell had been actively involved in pursuing the establishment of a national council. Although he may have favored the idea of a research organization, he apparently felt that NARST did not fit his particular goals and interests.

Regular

The fifth motion passed on February 27, 1928, delineated that "membership in the Association be of those interested in the supervision of science and in teacher training work for science teachers and all such others as may be elected to membership by the Association."

In the summary letter of this meeting (Appendix B), the Executive Committee announced that "new members, outside the original invitation list, may be added by election at the time of the next annual meeting." They further stated that they expected several members to be invited to join at that time. However, Eikenberry later commented, in an article published in Science Education, Volume 13, that there was no "intention to add to the membership list very rapidly during the formative period."⁵

At the Second Annual Meeting, February 25, 1929, members voted to have the Executive Committee formulate qualifications for membership. The minutes for the 1929 meeting recorded that "An essential qualification for membership [was] that the proposed member has published acceptable research."⁶

At the Third Annual Meeting, February 24-25, 1930, the first NARST constitution and bylaws were presented. In the final draft of this document (Appendix C-1), Article IV defined membership:

The Association shall have unlimited membership among those who by training and work have shown their interest in the efficient teaching of science and who have demonstrated ability in the field of educational research whether in Elementary School, the Junior or Senior High School, the College, or the Teacher Training School. Individuals who have contributed outstanding service of any nature may, upon recommendation of the Executive Committee and approval of members, be admitted to membership.

Article II of the Bylaws outlined the procedures for membership application:

Section 1. The names and addresses, together with an abstract of the qualifying activities, of proposed new members shall be sent to the Secretary in writing. All such names shall be submitted to the Executive Committee for consideration and nomination for membership. Those nominated shall be voted upon by the Association at the next annual meeting.

Section 2. All resignations shall be sent to the Secretary in writing.

The adoption of the first constitution and bylaws meant the approval of the included dues increase. Thus, the cost of membership increased from \$2.00 to \$5.00, \$1.00 of which was appropriated to Science Education (Table 4).

In 1931 two items of business were transacted that pertained specifically to membership. Item one directed Secretary-Treasurer S. Ralph Powers to draft an official membership form; probably the first

Table 4

NARST Membership, Dues, and Journal Subscriptions (1930-1991)

Month/year	Member ^a journal sub- scriptions	Regular (1928-1991)		Life (1930-1969)		Honorary Life (1935-1961) ^b Emeritus (1977-1991) ^c	Patron (1963-1991)		Associate (1964-1975)		Sustaining (1976-1991)		Total no.
		dues	no.	dues	paid		dues	no.	dues	no.	dues	no.	
Feb. 1928		\$2.00	16										16
Feb. 1929		2.00	33										33
Feb. 1930	\$1.00	5.00	40	\$100	1								41
Dec. 1931	1.00	5.00	40	100	1-2								41
Feb. 1932	1.00	5.00	40	100	1-2								41
Dec. 1933	1.00	5.00	49	100	2-3								50
Dec. 1934	2.00	5.00	58	100	2-3								59
Dec. 1935	2.00	5.00	64	100	2-3	2 ^b							67
Dec. 1936	2.00	5.00	62	100	2-3	2							65
Dec. 1937	2.50	5.00	66	100	2-3	2							69
Dec. 1938	2.50	5.00	72	100	2-3	2							75
Feb. 1939	2.50	5.00	68	100	2-3	2							71
1940	2.50	5.00	69	100	2-3	2							72
1941	2.50	5.00	69	100	2-3	2							72
1942	2.50	5.00	70	100	2-3	2							73
1943	2.50	5.00	70	100	2-3	2							73
1944	2.50	5.00	71	100	2-3	1							74
1945	2.50	5.00	71	100	2-3	1							74
Dec. 1946	2.50	5.00	71	100	2-3	1							74
1947	2.50	5.00	108	100	3	1							111
1948	2.50	5.00	152	100	3	5							160
1949	2.50	5.00	144	100	3	6							153
1950	2.50	5.00	177	100	3	7							187
1951	2.50	5.00	200	100	3	7							210
Feb. 1952	2.50	5.00	177	100	2	7							186
Aug. 1953	5.00	7.00	189	100	2	15							207
Winter 1954	5.00	7.00	215	100	2	17							235
Winter 1955	5.00	7.00	155	100	2	17							175
Apr. 1956	5.00	7.00	147	--	2	--							±170
1957	5.00	7.00	180	--	1	--							±200

Table 4 (continued)

Month/year	Member ^a journal sub- scriptions	Regular (1928-1991)		Life (1930-1969)		Honorary Life (1935-1961) ^b Emeritus (1977-1991) ^c	Patron (1963-1991)		Associate (1964-1975)		Sustaining (1976-1991)		Total no.
		dues	no.	dues	paid		dues	no.	dues	no.	dues	no.	
Oct. 1958	\$5.00	\$ 7.00	--	--	1	--							±250
June 1959	8.00	10.00	150	\$200	1	--							±260
Mar. 1960	8.00	10.00	--	200	1	--							±283
1961	8.00	10.00	--	200	1	--							±270
1962	No journal	10.00	296	200	--	--							±300
1963	6.00	10.00	311	200	--	--	\$100	14					326
1964	6.00	10.00	309	200	--	--	100	14	Initiated				±326
1965	6.00	10.00	486	200	--		100	21	\$10	--			±510
1966	6.00	10.00	401	200	--		100	19	10	--			420
1967-	6.00	10.00	--	200	--		100	10	10	--			500
1968	2 yr. vol.	10.00	--	200	--		100	9	10	--			601
1969	6.00	10.00	--	Eliminated			100	11	10	--			720
Fall 1970	6.00	10.00	--	--			100	11	10	--			908
Dec. 1971	6.00	10.00	--	--			100	2	10	--			869
Dec. 1972	8.00	15.00	704	11			100	2	15	216			932
Dec. 1973	8.00	15.00	567	11			100	2	15	209			789
1974	10.00	15.00	549	11			100	8	15	205			773
1975	11.00	20.00	613	10			100	11	Eliminated		Initiated		635
1976	13.00	22.00	705	10	15 ^c		100	6			\$40	3	761
Aug. 1977	15.00	22.00	705	10	13		100	6			40	3	720
1978	15.00	22.00	705	10	25		100	2			40	7	737
1979	15.00	24.00	691	10	27		100	2			53	7	723
Aug. 1980	17.50	26.50	645	9	25		100	1			53	8	692
Dec. 1981	20.00	34.00	660	7	28		--	1			68	5	701
Dec. 1982	30.00	44.00	547	7	28		(Set by				88	--	582
Dec. 1983	20.00	44.00	543	6	32		Board and				88	--	581
Dec. 1984	20.00	44.00	604	4	24		exceeds				88	--	632
Dec. 1985	20.00	44.00	504	3	29		sustaining				88	--	536
Dec. 1986	20.00	44.00	609	3	30		member				88	--	642
Dec. 1987	30.00	48.00	719	2	30		fee)				96	--	751

Table 4 (continued)

Month/year	Member ^a journal sub- scriptions	Regular (1928-1991)		Life (1930-1969)		Honorary Life (1935-1961) ^b Emeritus (1977-1991) ^c	Patron (1963-1991)		Associate (1964-1975)		Sustaining (1976-1991)		Total no.
		dues	no.	dues	paid		dues	no.	dues	no.	dues	no.	
Dec. 1988	30.00	54.00	729		2	30					108	--	761
Dec. 1989	30.00	54.00	779		2	42					108	--	823
Dec. 1990	30.00	54.00	830		2	44					108	--	876
Aug. 1991	30.00	54.00	880		2	50					108	--	932

^aThis is the amount of the annual dues that goes toward member subscriptions.

^bHonorary life membership was a category established for retired NARST members. A retired member being nominated and approved for this status paid no dues, but continued to receive Science Education until December 1961, when NARST no longer was affiliated with the publication. The last honorary life membership list found was 1955.

^cThe emeritus category for NARST membership became official in 1978. The establishing of this category for retired members was one of the bylaw changes included for membership approval on the 31 December 1977 ballot. Emeritus members receive full rights and privileges of the Association without cost, except for the Journal, purchasable at membership contract rates.

Source: Numbers are taken from NARST minutes, financial records, and membership lists found in the Archive at Drake University. However, some membership totals did not appear to include some of the special membership categories.

form. Motion two appears to have been a policy change or modification. In the Bylaws, Article III stated: "Any member failing to pay dues within six months after being duly notified shall forfeit the right to membership." The motion approved at the 1931 meeting declared that, if duly notified, an individual's membership in the Association would be considered lapsed when payment of dues had become delinquent for one year.⁷

The next constitution and bylaws were published in Science Education in 1948 after the first postwar meeting. The dues were set at \$5.00. However, the amount going toward Science Education had more than doubled since the first constitution. Now \$2.50 of each payment was submitted for the member's journal subscription.

Although the dues had not increased, the membership requirements and approval procedures were more stringent than those of the first constitution. The publication requirements for membership, discussed at the 1929 meeting, were now officially incorporated into the constitution. Article V (Appendix C-2) read:

This Association shall have unlimited membership among those who by training and work have shown their interest in the improvement of science teaching in any field, and who have contributed philosophical or statistical studies or applications of research, which contributions shall have been made accessible through suitable publication or report. Individuals who have contributed outstanding service to the advancement of science in education may, upon recommendation of the Executive Committee and approval of the membership, be admitted to the Association.

Many members recounted in interviews and on the "NARST History Questionnaires" the membership approval procedures outlined in the 1948 Bylaws. Article II, Section 1, stipulated:

The names and addresses, together with an abstract of the qualifying activities and research of proposed new members shall

be sent to the Secretary in writing. From these names the Executive Committee shall nominate persons for election to membership. These nominations, together with a summary of the qualifying data in each case and a ballot shall be submitted to the members of the Association at least three months prior to the annual business meeting. Two-thirds of the votes received by mail 30 days before the annual business meeting shall constitute election to membership. The new members shall be received into the Association at the annual business meeting.

These procedures and the strict requirements were responsible for individuals feeling honored when nominated for membership, but also feeling apprehensive while waiting notification of membership rejection or approval. A few membership applications from the forties, fifties, and sixties were found in the NARST Archives. All of them were several pages long and generally included the potential member's picture. Attached to most of the applications were lists of publications, copies of research, recommendation forms or letters, vita, and autobiographical information. Some of the personal information requested included: spouses name; ages, sex, and names of children; present activities and interests; and church membership or preference.

Letters of rejection and congratulation were also discovered in the archival files. One such letter informed a 1960 applicant that his application had been tabled. The notification stated that two criteria needed to be met:

The first of these, publication of your present study which seems to have promise for all of us in teacher education. The second involves an indication of sustained interest in science education. Our constitution states, "This Association shall have unlimited membership among those who by preparation and activities have shown their interest in the improvement of science teaching Therefore, there was some concern about your being qualified.

earch interest of this applicant was the teaching of scientific skills, but his training had been in psychology and child ment.

1975 the bylaw pertaining to membership eligibility was . The intent was to expand and open up the membership. The lity requirement was now worded:

is Association shall consist of Members who have had the eparation, demonstrated the competence, and evidenced the terest to make important research contributions to the field of ience education. The usual preparation for members is advanced aduate work in science education or its equivalent. Competence usually demonstrated by a report of a research study or of an plication of research in science education.

e amendment had passed after extensive discussions about the d cons of relaxing membership requirements. Several felt the e and professional intimacy of the Association would be lost.

O. Pella, 1966 NARST president, contended in a 30 July 1991 to the author:

at opening the membership to people of all disciplines made RST into just another organization. When anything means everything to everybody it means nothing to everybody.

hers members maintained that expanding the diversity of the ship would enhance the exposure and impact of NARST and science lon research. Many felt the membership would increase, and umently the financial status of NARST and its journal would e. The membership did rise from 635 in 1975 to 761 in 1976 4). This rise coupled with a \$2.00 increase in dues was a lcant boost. However, the \$2.00 increase was just one of l increases occurring in the seventies. Previous efforts to e finances had called for increasing dues from \$10.00 in 1971,

to \$15.00 in 1972, and to \$20.00 in 1975 (Table 4). By 1981, in a span of only 10 years, dues had risen to \$34.00, more than triple the 1971 membership fees.

During the 1980s two additional fee increases--\$10.00 each--were approved. The most recent, the 1987 change, established dues at \$54.00. The dues remained at this level at least through 1991.

The membership dues increased through the years, but the eligibility requirements continued to be simplified. In the June 1991 NARST News, the new bylaws defined membership eligibility in just one sentence: "This association shall consist of members who are working toward improving science education through research" (Appendix C-5).

The 1991 membership application was equally simple. Name, address, and phone was basically all that was required beyond payment of dues.

Life

Life memberships were instituted at the Third Annual Meeting, February 1930, with the adoption of NARST's first constitution. Dues for this category were established as \$100. Minutes for the 1930 meeting showed receipt of the first life membership dues. No name was recorded for this first life member, but later evidence indicates that this person was probably W. L. Eikenberry or Walter G. Whitman. Both men were early life members, but the dates they obtained this status were not found. Consequently, the numbers recorded in Table 4 for early life members are indefinite.

In addition to Eikenberry and Whitman, the 1947 minutes lists a third life member, Clarence M. Pruitt. Pruitt had become a life

member in 1933. These three men appear to have been the only paid life members prior to the 1960s. In an April 30, 1961, letter to the members of NARST, Pruitt refers to himself as "the only paid and greatest length of time Life-Member."⁸ Since he was secretary-treasurer from 1947-1960 he would have known of other paid life memberships occurring during these years. Although, like Whitman, who died in 1952, and Eikenberry, who died in 1957, maybe other such members were deceased at the time of Pruitt's letter. However, no other life memberships were recorded in the minutes or dues-records prior to Pruitt's term of office nor during his term.

Dues for life membership remained at \$100 until the late 1950s. The bylaws in place in 1959 record the dues for life membership as 20 times that of a regular member. Since the regular dues were \$10, the dues for life membership were a one-time payment of \$200. However, just 10 years later, in 1969, the category of life membership was officially eliminated.

No records were found from the 1960s as to whom obtained life membership status during those years. However, NARST membership records from 1972 indicated at least 11 life members: Clarence E. Baer, Gerald S. Craig, Francis D. Curtis, John H. Jensen, Anita D. Laton, Morris M. Meister, Bertha Parker, Lois Meier Shoemaker, H. Craig Sipe, William R. Teeters, and Ralph K. Watkins. Several of these individuals, such as Baer, Curtis, and Jensen, were voted into honorary life memberships upon retirement. Any individuals among the eleven who were paid life members seemingly would have obtained this status during the mid to late 1960s.

No distinction in the 1972 membership list was made as to whether these individuals were honorary or paid life members. By that time, neither membership category was issued any more. The preceding two reasons led to all remaining life memberships being recorded from 1972 forward in the same column. However, the number of life members recorded in Table 4 does not always agree with membership lists and the number of names appearing in annual meeting programs. Occasional errors occurred in those records due to simple omissions, unrecorded deaths, or emeritus members accidentally listed as life members.

Honorary Life and Emeritus

The first honorary life members were elected at the 1935 annual business meeting. The motion "carried that the Association appropriate \$100 for Life Membership to Elliot R. Downing, and a like amount for Life Membership to Otis W. Caldwell."⁹ These are the only two honorary life members for which such an appropriation was made.

No additional honorary life members were added until 1948. At this time Secretary-Treasurer Pruitt nominated five retiring NARST members for this status. Since Downing had died in 1944 and Caldwell in 1947, the total honorary life members stood at five (Table 4). Thereafter, through at least 1955, several members upon retirement, were voted into honorary life membership status. Generally the motion for such a vote was presented by Secretary-Treasurer Pruitt. A retired member obtaining this status paid no dues. However, they continued to receive Science Education through December 1961, at which time NARST's affiliation with the publication ceased.

After 1955 no further evidence was found of honorary life memberships being granted. Possibly a few were still issued, but the category had never been formally established in NARST bylaws.

Not until 1978 did a category for recognizing retiring members become officially instituted. This new category was known as "emeritus members." The establishing of this category was one of the bylaw changes included for membership approval on the 31 December 1977 ballot. Thus, the Association recognized its first emeritus members in 1978. These members receive full rights and privileges of the Association without cost except for JRST, purchasable at the member contract rate.

Patron

In 1962 considerable concern arose over NARST's financial resources because the Association was preparing to launch a new journal, Journal of Research in Science Teaching. This concern led to a December 4, 1962, meeting involving:

Drs. Obourn, Novak, Barnes, Marshall, Fitzpatrick, Martin, and Mallinson met with Mr. Kenneth Anderson, Executive Vice-President of the Scientific Apparatus Manufacturers Association [SAMA], and Mr Jim Irving, Executive Secretary of SAMA Laboratory Equipment Section. . . . After discussing several possible approaches, it was decided that a campaign would be started to promote the concept of patron memberships at \$100 per company membership.¹⁰

Following this December 1962 meeting, the Laboratory Equipment Section of SAMA initiated the patron member campaign. This Section prepared and mailed letters to the top executives of approximately 300 companies in fields related to science education. The letter offered businesses and industries which had a relation to research in science education the opportunity to support NARST and its new journal.¹¹

Possibilities of using this same basic approach to other trade association groups were also explored.

The decision to initiate a patron membership led to amendments to the NARST Constitution and Bylaws. The proposed amendments as printed in the January 15, 1963, NARST Newsletter follow:

Sec. 1, B -- to insert paragraph 3

A person, corporation, or institution interested in furthering research in Science Education, upon agreeing to contribute one hundred dollars (\$100.00) or more per annum to the Association, may be designated a Sustaining Member by the Executive Board.

Sec. 2 -- to add

The dues of a Sustaining Member shall be at least \$100.00 per annum.¹²

Why the wording "Sustaining Member" was used instead of "Patron Member" was not found. However, the final approved wording was changed to "Patron" and had the phrase "upon approval by the Executive Board" added. Only the first proposed amendment was incorporated into the bylaws. However, it was included in Section 2 of the bylaws instead of Section 1.

The original proposed amendments had appeared in the January 1963 NARST Newsletter. In the October 1963 publication of the newsletter, the initial results of the patron member campaign were shared with the membership. Printed on the last two pages of the newsletter was the first official list of patron members. The NARST membership was requested to show appreciation to these patrons:

Mr. H. Glasser, President
Atomic Accessories, Inc.
Valley Stream, New York

Mr. James G. Scarff
Executive Vice-President
E. Leitz, Inc.
New York, New York

Mr. Henry A. Burnett
Difco Laboratories
Detroit, Michigan

Dr. Vaden W. Miles
Department of Physics
Wayne State University
Detroit, Michigan

Mr. Warren Everote, Pres.
Encyclopedia Britannica Films
Wilmette, Illinois

Mr. Emanuel Golberg
Nalge Company, Inc.
Rochester, New York

Mr. Wm. G. Ohaus, Vice-Pres.
Ohaus Scale Corporation
Union, New Jersey

Mr. Richard Lidz
Mettler Instrument Corp.
Princeton, New Jersey

Mr. John P. Sheldon
E. H. Sheldon Equipment Co.
Muskegon, Michigan

Mr. John M. Youngpeter
Dir. Ed. Services Dept.
Ward's Natural Science
Establishment, Inc.
Rochester, New York

Mr. A. Macalaster, President
Macalaster Scientific Corp.
Cambridge, Massachusetts

Mr. Abraham White
Barnstead Still &
Sterilizer Company
Boston, Massachusetts

Mr. A. R. Smith, Jr.
Gen. Mgr. Sci. Ed. Products
Div. of B-D Lab., Inc.
San Carlos, California

Mr. E. A. Moudry
Vice-President Sales
Kewaunee Technical
Furniture Co.
Statesville, N. Car.¹³

By the time the third issue of NARST's new journal was sent to printing, four additional patrons had been added to the initial list:

Mr. Edward A. Campbell, Mgr.
Better Light, Better Sight
Bureau
New York, New York

Mr. James F. Ryley
Owens-Illinois Company
Toledo, Ohio

Mr. Howard L. Malakoff
Vice President and Gen. Mgr.
Cities Service Research and
Development Company
New York, New York¹⁴

Mr. E. E. Stasting
Wm. Ainsworth & Sons,
Incorporated
Denver, Colorado

Thus, the first-year (1963) list of patron members totaled eighteen (Table 4).

Initially patron memberships were intended to help defray expenses incurred with the publication of JRST. Businesses and industries had been targeted. An announcement in the March 1975 NARST Newsletter indicates changes that had occurred since patron memberships had been introduced. Members of NARST were being encouraged to become patrons and the Journal was not among the items listed for which patron membership funds would be used. The four items the funds would provide support for included:

- (1) awards for outstanding research contributions reported either in the Journal or at the Annual Meeting,
- (2) production of a Newsletter on a monthly or bi-monthly basis,
- (3) stimulation of needed research through the provision of essential fund, and
- (4) increasing the effectiveness of the NARST Placement Service.¹⁵

At the top of the list was the awards for outstanding research contributions. In 1975, a new award, called the Patron Award, was instituted. The first NARST Patron Award was presented at the 48th Annual Meeting (1975) in Los Angeles.

At that time, the dues for patron members were still \$100; but the amount had been established by the Executive Board. The bylaws no longer stated the dues to be \$100. The new wording read:

Minimum annual dues for Patron Members will be set by the Executive Board and will exceed annual dues of Regular and Sustaining Members. Associations, institutions, or corporations

may be admitted as Patrons with suitable contribution negotiated by an ad hoc Patrons Activities Committee.¹⁶

This wording is identical to the wording appearing in the 1991 version of the NARST Bylaws.

Associate

At the 1964 Annual Meeting the value of an additional new category of membership was discussed. The discussion led the Executive Board to propose a change in the bylaws permitting enrollment of associate members. This new category would allow:

enrollment of graduate students, interested lay persons, etc., who do not qualify for regular membership under the criteria of "scholarly contribution to research in science education or outstanding leadership in science education." Addition of this new class of membership would permit relatively unrestricted membership in NARST, but voting rights and office would be limited to regular members only. Also, Associate members would not be recommended for Fellow status in AAAS, since they would not meet the criteria established for such status through our association. Any Associate member could ask to be considered for regular status and election to membership would take place as usual, i.e., approval by the Executive Board.¹⁷

The associate member category existed for 11 years. At the time it was eliminated in 1975 the number of associate members had grown to over 200 (Table 4).

Sustaining

In 1975 the associate membership category was abolished and the sustaining membership category was created. The Policy Committee had recommended this category so that persons desiring to support NARST financially could do so without becoming a patron.¹⁸ Dues for sustaining members were established to be "double the dues for Regular Members."¹⁹ The 1991 NARST Bylaws carried the same requirement for

this category. Thus, to become a sustaining member in 1991 would have required a dues payment of \$108 (Table 4).

Demographics

Much of the data utilized for this portion of the chapter was collected from 11 sample years (Table 5). To the extent possible at least one sample was obtained from each decade of NARST's first 30 years and two samples from each decade of the second 30 years. Availability of membership lists, significant historical events (WWII), and dramatic membership changes sometimes entered into sample selection.

Names and addresses as recorded in membership listings were the primary means of determining the gender, profession, and geographic demographics for Table 5. When names and addresses were inadequate for making gender and profession determinations, more complete information was sought in membership directories preceding or following the sample year. If these resources also proved inadequate, NARST Archivist, Paul H. Joslin, was consulted. Attempts were then made to reach individuals he did not know. In some instances, contacts were made with graduate schools or NARST members located in the same community as the individual in question.

In spite of these efforts, the profession category for some individuals was unable to be determined. Most likely they were graduate students. The "Number unknown" found at the bottom of Table 5, Part I, indicates the number of individuals for whom profession could not be determined. The highest "Number unknown" occurred in 1980. Out of 680 members, professions could not be

Table 5-A

Membership Demographics: Gender and Profession

Item	1929 Feb. 25	Prewar 1939 Feb. 26	Postwar 1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 15	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
<u>Total membership</u>	33	76	74	169	207	311	601	911	680	680	656
Gender											
Percentage males	100%	89.5%	86.5%	83.4%	85.5%	87.8%	87.0%	86.8%	85.6%	77.8%	71.6%
Percentage females	0	10.5%	13.5%	16.6%	14.5%	12.2%	13.0%	13.2%	14.4%	22.2%	28.4%
Profession (% of known)											
Universities and colleges	69.7%	77.6%	77.0%	81.5%	75.4%	79.7%	87.8%	90.8%	90.2%	87.4%	86.4%
Local school districts (teachers & administrators)	27.3%	15.8%	12.2%	10.1%	15.3%	12.5%	6.8%	5.6%	5.9%	8.4%	7.6%
Government education agencies (provincial, state, national)	3%	5.3%	5.4%	3.6%	4.9%	3.5%	2.5%	1.7%	1.6%	1.6%	2.4%
Professional organizations and science institutions (i.e., NSTA, museums)	0	1.3%	2.7%	1.2%	1.5%	1.6%	1.2%	0.6%	1.0%	1.6%	2.1%
Businesses (i.e., publishers, equipment suppliers, research laboratories)	0	0	2.7%	3.6%	3.0%	2.9%	1.7%	1.3%	1.3%	1.0%	1.5%
Number unknown	0	0	0	1	4	0	13	22	7	17	0

Table S-B

Membership Geographic Demographics: Domestic

Item	1929 Feb. 25	Prewar 1939 Feb. 26	Postwar 1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 15	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
<u>Total membership</u>	33	76	74	169	207	311	601	911	680	686	656
<u>Summary</u>											
Number of states and (membership percentages)											
Northeast (11 sts. & DC)	4(51.5)	7(43.4)	8(36.5)	10(36.1)	10(35.7)	10(40.2)	12(36.9)	11(36.8)	11(36.0)	10(27.4)	12(24.2)
Southeast (12 states & Puerto Rico)	1 (3.0)	4 (7.9)	4 (9.4)	8(13.0)	3(14.0)	6 (8.4)	11(13.0)	13(13.5)	10(11.9)	10(13.4)	13(16.3)
Midwest (12 states)	8(42.4)	8(34.2)	8(40.5)	10(35.5)	11(33.8)	11(30.2)	11(33.8)	12(29.9)	12(34.0)	12(32.1)	12(27.4)
West (15 states)	1 (3.0)	4(11.8)	4(13.6)	7(15.4)	7(14.5)	10(18.8)	10(15.3)	12(15.6)	11(13.5)	11(16.6)	12(19.0)
<u>Detail</u>											
Northeast											
Connecticut	0	1	1	3	3	3	9	15	12	17	10
Delaware	0	0	0	0	0	3	5	3	1	0	3
Maine	0	0	0	0	1	1	1	7	4	6	5
Maryland	0	0	1	2	3	9	18	33	24	16	27
Massachusetts	4	5	1	5	7	10	19	27	16	15	11
New Hampshire	0	0	1	2	0	1	2	0	0	0	1
New Jersey	2	5	3	3	5	14	19	27	22	22	12
New York	8	15	15	34	38	57	104	133	90	66	53
Pennsylvania	3	3	1	3	3	12	25	71	65	36	28
Rhode Island	0	1	0	1	1	0	1	5	3	2	2
Vermont	0	0	0	1	1	0	1	3	2	1	1
Washington D.C.	0	3	4	7	12	15	18	11	6	7	6

Table S-B (continued)

Item	1929 Feb. 25	Prewar 1939 Feb. 26	Postwar 1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 15	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
Southeast											
Alabama	0	0	0	2	4	0	5	3	0	0	4
Arkansas	0	0	0	0	1	0	0	2	0	0	2
Florida	0	1	1	3	7	12	35	44	27	19	25
Georgia	0	0	0	2	3	5	13	23	19	22	28
Kentucky	0	0	0	0	0	0	2	10	7	4	2
Louisiana	0	0	0	1	1	2	2	4	2	3	5
Mississippi	0	0	0	0	0	0	5	2	2	1	2
North Carolina	0	3	1	2	2	0	6	9	6	17	15
South Carolina	0	0	0	0	0	1	3	2	1	3	9
Tennessee	1	1	3	6	7	4	2	0	9	6	4
Virginia	0	1	2	6	4	2	3	10	8	11	5
West Virginia	0	0	0	0	0	0	2	3	0	6	5
Puerto Rico	0	0	0	0	0	0	0	2	1	0	1
Midwest											
Illinois	2	6	8	14	20	24	34	46	45	40	20
Indiana	0	0	0	2	3	10	24	51	30	28	26
Iowa	0	0	0	2	2	4	15	28	25	26	20
Kansas	1	0	0	0	1	4	8	15	11	13	8
Michigan	2	4	5	8	18	22	36	44	39	32	22
Minnesota	1	3	3	7	6	5	12	16	15	14	20
Missouri	2	2	4	7	5	5	9	8	9	12	12
Nebraska	1	1	1	2	2	2	8	6	5	5	3
North Dakota	0	0	0	0	0	0	0	2	2	2	1
Ohio	3	5	7	14	10	10	36	38	36	31	35
South Dakota	0	2	1	1	1	2	1	3	2	2	1
Wisconsin	2	3	1	3	2	6	20	26	12	15	16

Table 5-B (continued)

Item	1929 Feb. 25	Prewar 1939 Feb. 26	Postwar 1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 14	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
West											
Alaska	0	0	0	0	0	0	0	0	0	0	0
Arizona	0	0	0	0	0	3	2	3	3	10	8
California	0	4	6	9	11	24	35	46	32	35	30
Colorado	1	3	2	6	9	14	12	15	12	6	17
Hawaii	0	0	0	0	0	0	1	2	1	0	1
Idaho	0	0	0	0	0	1	1	0	0	0	0
Montana	0	0	0	1	0	1	0	2	0	1	1
Nevada	0	0	0	0	0	0	0	2	0	0	0
New Mexico	0	0	0	0	0	0	0	4	2	1	2
Oklahoma	0	1	1	2	1	2	4	10	7	10	12
Oregon	0	0	1	1	3	8	12	9	6	4	7
Texas	0	1	0	3	3	5	15	29	14	30	34
Utah	0	0	0	1	1	1	3	0	1	4	8
Washington	0	0	0	3	2	2	7	18	13	11	4
Wyoming	0	0	0	0	0	0	0	2	1	2	1
Unknown	0	2	0	0	0	0	0	0	0	0	0

Table 5-C

Membership Geographic Demographics: International

*Denotes NARST member known to be an American working in a foreign country

Item	Prewar		Postwar								
	1929 Feb. 25	1939 Feb. 26	1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 15	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
<u>Summary</u>											
Number of countries and (percentage of foreign addresses)	0	0	0	0	4 (1.9)	5 (1.6)	1 (1.0)	8 (4.2)	9 (4.6)	15(10.5)	25(13.1)
Foreign address totals	0	0	0	0	4	5	6	38	31	72	86
<u>Detail</u>											
<u>Africa</u>											
Botswana	0	0	0	0	0	0	0	0	0	0	1
Egypt	0	0	0	0	0	0	0	0	1	1	2
Ghana	0	0	0	0	0	0	0	0	0	1	0
Kenya	0	0	0	0	0	1	0	0	0	0	0
Nigeria	0	0	0	0	0	0	0	3(1*)	1	2	2
South Africa	0	0	0	0	0	0	0	0	0	0	1
Sierra Leone	0	0	0	0	0	0	0	0	1	0	0
<u>Asia</u>											
India	0	0	0	0	0	0	0	1	0	2	0
<u>Asia-Far East</u>											
Korea	0	0	0	0	0	0	0	0	0	0	2
Indonesia	0	0	0	0	0	0	0	0	0	0	2
Japan	0	0	0	0	0	0	0	0	0	1	0
Philippines	0	0	0	0	1*	0	0	1*	0	0	1
Republic of China	0	0	0	0	0	0	0	0	0	0	1
Taiwan (Formosa)	0	0	0	0	1*	0	0	0	0	0	1
Thailand	0	0	0	0	1*	0	0	0	0	0	0
West Malaysia	0	0	0	0	0	0	0	1	1	0	0

Table 5-C (continued)

Item	1929 Feb. 25	Prewar 1939 Feb. 26	Postwar 1946 Dec. 30	1948 April	1953 Feb. 14	1963 July 15	1968 June	1973 Feb. 1	1974 August	1980 Aug. 15	1987 Apr. 15
Asia-Middle East											
Israel	0	0	0	0	0	0	0	3	3	6	11
Jordan	0	0	0	0	0	0	0	0	0	0	4
Lebanon	0	0	0	0	0	1*	0	3(1*)	1	0	0
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	2
U. Arab Emirates	0	0	0	0	0	0	0	0	0	0	2
Australia	0	0	0	0	1	0	0	1	1	11	12
Europe											
Belgium	0	0	0	0	0	0	0	0	0	1	0
England	0	0	0	0	0	0	0	0	0	1	1
Germany	0	0	0	0	0	1*	0	0	0	1	2
Portugal	0	0	0	0	0	0	0	0	0	0	1
Spain	0	0	0	0	0	0	0	0	0	2	1
New Zealand	0	0	0	0	0	1	0	0	0	0	0
North America											
Canada	0	0	0	0	0	1	6	25	21	39	32
Costa Rica	0	0	0	0	0	0	0	0	0	0	1
Mexico	0	0	0	0	0	0	0	0	0	0	1
Panama	0	0	0	0	0	0	0	0	1	1	1
South America											
Brazil	0	0	0	0	0	0	0	0	0	1	0
West Indies											
Jamaica	0	0	0	0	0	0	0	0	0	2	1
Trinidad	0	0	0	0	0	0	0	0	0	0	1

determined for 17 (2.5%). However, the figures recorded for profession demographics were percentages of the total known member professions.

Some inaccuracies may exist in Table 5, Part I figures. For instance, an individual may be both a graduate student and a public school employee. If this individual received mailings at his or her school, they were recorded under "Local school districts." No effort was made to determine how many of these individuals might be pursuing advanced degrees. In spite of such discrepancies, the author feels that the data are accurate enough to illustrate general profession trends of NARST membership.

Totals

The first time span depicted on Table 5 was 1929-1939. Even though the country was immersed in the Great Depression, the field of science education research was experiencing growth. During this decade, the number of states from which NARST members originated increased from 14 to 23; and the membership had more than doubled, 33 to 76.

The next segment of Table 5, 1939-1946, bridged the war years, throughout which the membership remained stable. However, within one year of the first postwar meeting, the membership again more than doubled--from 74 in 1946 to 169 in 1948.

From 1948 to 1953 membership gradually continued to rise, much the same as the interest in science education research. Part of the growing support indirectly resulted from efforts of U.S. President Roosevelt. The scientific research and development that had occurred

during World War II, had convinced Roosevelt of the need for peacetime support of scientific research. He requested that the Director of the Office of Scientific Research and Development, Vannevar Bush, outline a national policy for science. Bush's response, Science--The Endless Frontier, became the principal document upon which the National Science Foundation (NSF) was established.²⁰ Founded in 1950, NSF was created "to support basic scientific research, initiate programs to strengthen scientific research potential, and support science education programs at all levels."²¹

In 1952 and 1953, NSF supported summer institutes to upgrade the science background of college teachers. The success of these institutes led NSF into increased involvement in science education. This additional NSF support contributed to the rising numbers of science educators and science education researchers.

Throughout the 1950s, interest in science education continued to expand. The National Academy of Science endorsed precollege teacher institutes. This impetus encouraged NSF to fund its first such institute, which was held at the University of Washington in 1954.²²

Another motivator for the development of science education was N. DeWitt's 1955 publication, Soviet Professional Manpower--Its Education, Training, and Supply. In 1957, DeWitt's claims of Soviet technological advantage were dramatically supported by the surprise launch of Sputnik. The U.S. responded with extensive actions designed to improve its science and technology status. One such response was the National Defense Education Act of 1958. Each of these events were strong catalysts for NSF to respond to requests for involvement in

precollege teacher training, curriculum development, and related research.²³ Millions of NSF dollars were poured into curriculum development and teacher institutes. Thus, more and more individuals became involved in science education research; and more and more individuals joined NARST. During these monumental years (1953-1963) for science education, the NARST membership rose to 311, a gain of more than 100 members. Emeritus member, Milton O. Pella, said that prior to this time period very few people were science educators. He further added that "[t]he label science education came into use in the middle 50's."²⁴

With the enhanced interest in science education, the curriculum development movement, and the increasing availability of NSF funds and other supplemental research grants, the rise in NARST membership accelerated. From 1963-1968, membership numbers nearly doubled.

Furthermore, according to Pella,

[d]uring the 60's colleges and universities came to the realization that Science Education was a necessary area of specialization to be involved with the training of science teachers. Up to that time there were few "special methods" courses for prospective teachers. If there were they were usually taught by members of the respective academic departments.²⁵

Besides the preceding, other factors contributed to the steep increase in membership numbers. One was the initiation of associate memberships in 1964. The main target audience for associate memberships was graduate students.

Related to graduate student memberships was the

[i]ncrease in college populations and increase in the number of students studying for and receiving the PhD or EdD with special interest in science education. The increase in advanced degrees was the result of financial support by NSF and USOE [United States Office of Education].²⁶

The previous explanations for the growth experienced from 1963-1968 continued to be valid through the early 1970s. Additionally, members indicated that there was more support for travel and general expenses during this time period. The resulting NARST membership as of December 1972 was an all-time high--932 members (Table 4). Over 200 of these members were associates. According to Willard J. Jacobson, "Much of the curriculum development work was completed during this period. There were exciting things to report, and there was a desire to be a part of some of the most exciting developments in the history of science education."²⁷

However, after three record-setting membership years, 1970-1972 (Table 4), of totals over or near 900, membership numbers plunged. In August of 1974, the number of NARST members stood at 680. Pella surmised that the peak partially resulted from the opening of membership doors, and the drastic fall probably occurred when the "many who joined found that it was not within their interests or welfare."²⁸ Evidence showed that most of the graduate students during this time period dropped their memberships once their degree work was finished.

Another main reason for the drastic decline was the withdrawal of the NSF and USOE financing of supplementary training programs and curriculum development in science.²⁹ Additionally, the notion existed that there were plenty of innovative science programs and that new ones were coming out frequently. "There was no reason to do more; so thought many people; after all these programs were developed by experts, so now all that was necessary was to use the programs."³⁰

Pella further felt that these programs contributed to the decreased interest in science:

As you know most of these [new science curriculum] were failures because they were based on false hypotheses. There were magic words like--problem solving; discovery; hands on; processes of science; do not concentrate on knowledge, concentrate on process, etc. These magic terms caused a decrease in the interest in science.³¹

Additional responses regarding the decline and continued lower membership totals came from individuals who shared that they were no longer active because NSTA better suited their needs. Others conveyed that AERA better suited their research interests. Pella encountered similar opinions regarding AERA. During the time period from 1974-1987, Pella had observed that there was a shift from science to educational psychology as the center for much of the research in science education.

People in the area seem to be more comfortable dealing with Education hypotheses than with the learning of content and structure in science. They seem to like the research reported in AERA meetings more than NARST or they are finding the research types are the same. Recent discussions with some people in Science Education indicated that AERA had more of what they like. Science education seems to have lost much of its science orientation.³²

Throughout most of the mid-1980s the membership remained fairly stable. Members left within the NARST ranks were the "hard-core of career science educators who were in the business for the long term."³³ However, as Table 4 figures for the late 1980s and early 1990s were examined, a resumed growth in membership became apparent.

Profession

As Table 5, Part I, was analyzed, periods of increases and decreases in membership generally paralleled those occurring in the

largest profession category, "Universities and colleges." The explanations for the rises and decreases of both were also the same. The only year of exception was 1953. The membership in NARST had increased, but for the first time no corresponding increase was witnessed in the "Universities and colleges" category. Instead, a 6.1% drop occurred. Correspondingly, the percentage for "Local school districts" rose by 5.2%. Interesting to note was that 1953 was the beginning of emphasis on precollege teacher institutes, and also the year of NSTA's first national convention.

The growth of NSTA could certainly be a contributing factor in the declining NARST membership percentages seen in the "Local school districts" category from 1953 on through the 1970s. Just over 600 were registered for the first NSTA convention in 1953, but by 1966 the number of registrants surpassed 6,000.³⁴

For marketing reasons, the success of the NSTA conventions also probably led to declining percentages within the "Businesses" category. Thirty exhibitors had participated in the 1953 NSTA Convention; over 300 made a showing at the 1966 NSTA Convention.³⁵

Prior to 1953, the highest percentage for "Local school districts" occurred in 1929. More than one-fourth (27.3%) of NARST's membership fell into this category. One reason was that there was not yet a national science teachers organization. Most of the individuals who had met in Cambridge in February 1928, actually had the formation of a national council of science teachers as their goal; but, instead, NARST was born. However, these early science educators did not give

up their goal. In December 1934, American Science Teachers Association (ASTA) was founded.

The establishing of ASTA could be partially responsible for the largest drop (11.5%) within the "Local school districts" category. Another strong possibility for the drop was financial. Paul DeHart Hurd shared that because of the Depression many teachers such as himself could not afford to belong to more than one organization or possibly not to any organization. Most chose memberships in organizations that were less research oriented, such as NBT or ASTA.

As for members from the 1980s that fell into the "Local school districts" category, most probably became involved in NARST as a result of graduate work or contacts with science education researchers working in the field. Over a five-year period, at various meetings throughout the country, the author frequently asked science teachers and supervisors if they had heard of NARST or its journal, JRST. The author did not encounter anyone who had heard of either if the individual had not pursued an advanced degree directly related to science education. Even then, many had not heard of either.

As for members from government education agencies, the involvement grew in the first decade as the field of science education expanded. It remained constant through the war years, dropped between 1946 and 1948, but rose again with the tide in which NSF was borne. From the early years through some time into the 1960s many of the science specialists who served in USOE were very active members of NARST. Cooperative efforts of NARST and USOE produced reviews of science education research from 1947 into the 1960s.

However, the growth of science education experienced in the 1960s greatly increased the number of science educators. No longer were a select few, who were generally also members of NARST, serving in positions of leadership in most of the science education organizations and agencies. Furthermore, several additional education-related organizations evolved or gained strength. These factors probably contributed to the percentage drops seen in memberships listing government agency, professional organization, or science institution addresses.

Gender

The Association has always had and probably will continue to have a predominantly male membership. Particularly during the first 50 years of NARST's existence, largely due to traditional family responsibilities, proportionately few women pursued professional careers or advanced degrees. Those that did generally did not pursue careers related to the sciences.

The two upward trends seen in the percentages of female members reflected occurrences in society. Prior to the war the number of women members represented 10.5%. By 1948 the percentage had climbed to 16.6%. Circumstances surrounding World War II led to proportionately more women assuming predominantly male-dominated positions and jobs. The work force, the education community, the political arena, and organizational leadership witnessed the involvement of more women. In 1941 the first woman, Florence G. Billig, was elected to the NARST's Executive Committee. She became

NARST's first female president in 1943; and because of the war, she remained in this position for three years, 1943-1945.

Shortly after the war, the percentage of women members began to drop. This again was a reflection of what was happening in society. Several men had returned to the work force; many women were assuming traditional family responsibilities; the baby boom generation was being born.

Activities surrounding the Equal Rights Amendment and various women's liberation movements of the 1970s and 1980s, brought with it an influx of women pursuing higher education and less traditional careers. The membership demographics of Table 5 again reflect the societal trends. The percentage of known female members in 1974 was 14.4%. By 1980 the percentage had jumped to 22.2%, and by 1987 to 28.4%. Prior to the 1980s NARST had elected two female presidents-- Florence G. Billig (1943-1945) and Betty Lockwood (1951-1952). Both had served multiple terms.

From 1984-1991 NARST had elected four women to the presidency--Ann C. Howe (1984), Linda R. DeTure (1988), Patricia E. Blosser (1989), and Jane Butler Kahle (1991). Additionally, during this time the first female research coordinator was elected, Frances Lawrenz (1990-1992).

Geographic: Domestic

To illustrate domestic membership demographics, the United States was divided into four regions--Northeast (11 states and Washington, D.C.), Southeast (12 states and Puerto Rico), Midwest (12 states), and West (15 states). Table 5, Part II, lists the states assigned to the

four regions and summarizes membership data for the regions, as well as for individual states.

During the first three years of NARST's existence over 50% (4 states represented) of the membership originated in the Northeast and more than 40% (8 states represented) originated in the Midwest. The Southeast and West, each with one member, constituted only 6% of the membership. By the time of the first postwar meeting in 1948, the membership had grown from 33 in 1929 to 169, and from 14 states represented to 35.

The respective regional percentages had also changed significantly by 1948: Northeast (36.1%), Southeast (13.0%), Midwest (35.5%), and West (15.4%). With the exception of 1963 (Northeast and West increased; Southeast and Midwest decreased), these membership percentages remained fairly constant through the sample years, until 1980. In this year, the Northeast experienced a large percentage drop. Prior to this time, membership from this region had always exceeded 35.6%. In 1980 it was found to be 27.4% and by 1987--24.2%. Reasons for the decline included notable reductions in memberships from New York and Pennsylvania, significant increases in members from the West, and rising numbers of international members.

By 1987 a decrease was also seen in the percentage of midwest members. The percentage had fallen from 32.1% in 1980 to 27.4% in 1987. The reasons for this decline were the same as those cited for the Northeast in 1980--rising numbers of western and international members and falling numbers within certain states. Three states

showed a decrease in membership of 23% or more--Illinois, Iowa, and Michigan.

As expected with two regions indicating percentage lows in 1987, the remaining two regions recorded percentage highs. In spite of the increasing number of international members, both the Southeast and the West had gained about 3% between 1980 and 1987. From 1980 to 1987, the following states increased by 4-6 members in the southeast region --Alabama, Florida, Georgia, and South Carolina. The top gains for the West were California with 11 additional members, and Texas and Utah, both with 4.

Data from Table 5-B were utilized to construct a table (Table 6) comparing local demographic trends for the fifth and sixth decades of NARST's first 60 years. The relevant Table 5-B membership totals were added, and then the states were ranked accordingly. Since Washington, D.C. and Puerto Rico were included, the rankings ranged from 1-52. Interesting to note was the state of Iowa, with a population of less than 3 million, ranked as high as 10th in both decades. During the 1980s (the sixth decade), other states, such as Colorado, with populations similar to Iowa ranked 20th or lower.

Also noted were seven states among the top 30 that had increased their membership ranking by six or more positions from the fifth decade to the sixth decade. Two of these had reached the top 10--Georgia and Texas. The two moving up the furthest--12 and 15 respectively--were West Virginia and Utah. The remaining three states included Arizona, North Carolina, and South Carolina.

NARST U.S. Demographic Trends for 1968-1987

Membership for years 1968, 1973, 1974 (5th decade)			Memberships for years 1980, 1987 (6th decade)			Comparisons	
States	Total members	Rank (5th decade)	States	Total members	Rank (6th decade)	Rank (5th decade)	Change in rank from 5th to 6th decade
New York	327	1	New York	119	1	1	0
Pennsylvania	161	2	Ohio	66	2	6	+4
Illinois	125	3	California	65	3	5	+2
Michigan	119	4	Texas	64	4	13	+9
California	113	5	Pennsylvania	64	4	2	-2
Ohio	110	6	Illinois	60	6	3	-3
Florida	106	7	Michigan	54	7	4	-3
Indiana	105	8	Indiana	54	7	8	+1
Maryland	75	9	Georgia	50	9	15	+6
New Jersey	68	10	Iowa	46	10	10	0
Iowa	68	10	Florida	44	11	7	-4
Massachusetts	62	12	Maryland	43	12	9	-3
Wisconsin	58	13	New Jersey	34	13	10	-3
Texas	58	13	Minnesota	34	13	16	+3
Georgia	55	15	North Carolina	32	15	24	+9
Minnesota	43	16	Wisconsin	31	16	13	-3
Colorado	39	17	Connecticut	27	17	19	+2
Washington	38	18	Massachusetts	26	18	12	-6
Connecticut	36	19	Missouri	24	19	23	+4
Washington, DC	35	20	Colorado	23	20	17	-3
Kansas	34	21	Oklahoma	22	21	24	+3
Oregon	27	22	Kansas	21	22	21	-1
Missouri	26	23	Arizona	18	23	34	+11
Virginia	21	24	Virginia	16	24	24	0
Oklahoma	21	24	Washington	15	25	18	-7
North Carolina	21	24	Washington, DC	13	26	20	-6
Nebraska	19	27	Utah	12	27	42	+15
Kentucky	19	27	South Carolina	12	27	37	+10
Maine	12	29	West Virginia	11	29	41	+12
Tennessee	11	30	Oregon	11	29	22	-7
Rhode Island	9	31	Maine	11	29	29	0
Mississippi	9	31	Tennessee	10	32	30	-2
Delaware	9	31	Nebraska	8	33	27	-6
Louisiana	8	34	Louisiana	8	33	34	+1
Arizona	8	34	Kentucky	6	35	27	-8
Alabama	8	34	Rhode Island	4	36	31	-5
Vermont	6	37	Alabama	4	36	34	-2
South Dakota	6	37	Wyoming	3	38	45	+7
South Carolina	6	37	South Dakota	3	38	37	-1
New Mexico	6	37	North Dakota	3	38	42	+4
West Virginia	5	41	New Mexico	3	38	37	-1
Utah	4	42	Mississippi	3	38	31	-7
North Dakota	4	42	Delaware	3	38	31	-7
Hawaii	4	42	Vermont	2	44	37	-7
Wyoming	3	45	Montana	2	44	47	+3
Puerto Rico	3	45	Arkansas	2	44	47	+3
New Hampshire	2	47	Puerto Rico	1	47	45	-2
Nevada	2	47	New Hampshire	1	47	47	0
Montana	2	47	Hawaii	1	47	42	-5
Arkansas	2	47	Nevada	0	50	47	-3
Idaho	1	51	Idaho	0	51	51	0
Alaska	0	52	Alaska	0	52	52	0

Source: Totals were obtained from respective membership directories.

Geographic: International

Australia can boast the first international member found in NARST records (Table 5-C). This individual's name and address appeared on a 1953 membership list. [Note: Australia is the only other country the author found that had established an organization similar to NARST. The NARST initiated closer ties with the Australian Science Education Research Association (ASERA) in 1984.] Three foreign addresses were found in the 1953 listing of 207 names. However, these three belonged to Americans serving in science education communities in the Far East.

Twenty years later, in 1973--the peak membership year recorded in Table 5--membership totalled 911. The international listings jumped from 4 to 38. Twice the number of countries were represented. Only three foreign addresses were known to belong to Americans working overseas. Twenty-five of the 38 international listings were Canadian. The following countries ranged from 1-3 members: Nigeria, India, Philippines, West Malaysia, Israel, Lebanon, and Australia.

The 38 listings of 1973 had represented 4.2% of the membership. By 1987 the percentage of international members had more than tripled --13.1%. This percentage translated to 86 members distributed among 25 countries. The preponderance of foreign members was still Canadian--32 total. Australia, Israel, and Jordan had 12, 11, and 4 respectively. Other countries indicating members ranged from 1-2. The only populated continent with no listings was South America.

International Exchange

The first international NARST contact referenced in the organization's minutes occurred at the Fourth Annual Meeting (1931).

George A. Rommert of Munich, Germany, presented a program titled "The Use of Microprojection Methods in Teaching Living Organisms."

Rommert's program was described as well received by NARST members.³⁶

However, no mention was found of why he was in the United States, who his NARST contact was, or how he was selected to be the dinner speaker.

The second internationally-related NARST activity appears to have been initiated during the early 1930s by the editorial board of NARST's official organ, Science Education. Charles J. Pieper, editor of Science Education, mentioned this early effort in an article written in 1937. In the article he listed purposes for a national journal of science education. The eighth purpose he presented stated that such a journal should acquaint

American teachers, supervisors and administrators of science with plans and programs and policies of science education in foreign countries. There are a large number of interesting movements going on in foreign countries. We tried in the early days to have on Science Education a group of foreign editors. We did get some reports of plans and activities in certain foreign countries. We have not done justice to the kind of things that have developed. . . . There have been in the last six years six important documents on science education published in England. Not one of them has had mention in Science Education during that time. I am willing to indicate the faults of the journal in order to indicate the possibilities of the journal.³⁷

Pieper's 1937 comments regarding the early days led to a browsing through prior Science Education issues. Found in the "Editorial Notes and Comments" of Volume 16 (1931) was an earlier statement by Pieper. He was describing the intended contents of the journal now that Science Education, Incorporated, had been established. He wrote that "there will appear in Science Education . . . articles and reports

dealing with science and with the philosophy and practice of science teaching in . . . foreign schools and colleges."³⁸

As these early articles pertaining to foreign schools were scanned, they were often found to be authored or co-authored by NARST members. Articles and authors from Volumes 16-19 are listed below with the NARST members designated.

Volume 16 (1931)

"Science in Russian Elementary Schools," Gerald S. Craig,
NARST

Volume 17 (1932)

"How Chinese Chemists Name the Elements," Hanor A. Webb,
NARST, and Ma Ling-yun
"Science Tour to Germany," Lois Meier Shoemaker, NARST
"English Science Teachers," F. W. Turner
"Physics in Relation to Manual Arts in Sweden," H. F.
Killander

Volume 18 (1933)

"English School Examinations," F. W. Turner

Volume 19 (1934)

"Science Teaching in Polish Primary Schools," A. Dmochowski

Volume 20, the April 1936 issue, listed the foreign editors

mentioned in Pieper's quotation of 1937:

Otakar Matousek, Charles University, Praha, Prague, Czechoslovakia

Karl von Hollander, Padagogische Akademie, Halle (Sasle)

Burgstrasse 44, Germany

F. W. Turner, Thames Valley County School, Twickenham, Middlesex,
England

Turner, the English editor, had previously written articles appearing in Volumes 17 and 18.

In 1937, at the Tenth Annual Meeting, the first member presentation with an international theme was delivered. Charter

member, Gerald S. Craig, presented a paper titled "The Contributions of Elementary Science to International Understanding."

Craig was very interested in the elementary science education of other countries. "He studied the status of science in elementary schools in Europe in 1931 and in Puerto Rico in 1948."³⁹ He was involved in writing several elementary series of textbooks that had considerable influence at home and abroad. Clarence M. Pruitt writes:

The Craig Elementary Science series have . . . exerted a very great influence upon the kind of science taught in American as well as in many foreign elementary schools. The books have appeared in Canadian editions as well as in German, Thai, and Japanese translations.⁴⁰

After World War II, the number of NARST members, such as Craig, in foreign service in science education increased. Editor Pruitt listed on Page 35 of the February 1953 issue of Science Education four NARST members in foreign service: H. Emmett Brown (Formosa), Earl R. Glenn (Philippines), Elwood D. Heiss (Thailand), and Vernon C. Lingren (Tripoli, Libya). As indicated in the preceding chapter section, 1953 was also the year the first international member was found in NARST records.

Six years after Pruitt's listing of members in foreign service, such information began to appear in the NARST Newsletter. Notes on members' reported activities continued to be a fairly regular feature of the newsletter from 1959-1975. To obtain an improved perception of the range and number of countries in which NARST members served, Table 7 was developed from information provided in the newsletters.

The peak years of reported foreign service were in the mid-1960s and mid-1970s. Members stated that during the 1960s funds became

Table 7

U.S. NARST Members Recorded in NARST Newsletters (1959-1975) as Working in Science Education in ForeignCountries

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
<u>Total</u>	4	3	4	8	10	19	34	13	4	1	1	1	5	3	5	45	12
<u>Africa</u> ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Kenya	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nigeria	1	1	0	0	1	0	1	2	0	0	0	0	0	0	0	2	1
Sierra Leone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Sudan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Uganda	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
<u>Asia</u>	0	0	0	2	2	2	5	1	0	0	0	1	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Russia	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0
Sri Lanka	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Far East	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Japan	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
New Guinea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Philippines	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
West Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Middle East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Afghanistan	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0
Bahrain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Israel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1
Jordan	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0
Lebanon	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0
Malaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Turkey	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0
<u>Australia</u>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1
Christmas Island	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

Table 7 (continued)

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
<u>Europe</u>	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0
Austria	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Belgium	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Czechoslovakia	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Denmark	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	1	0
England	0	1	0	0	0	2	2	2	1	0	0	0	1	0	0	2	0
Finland	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
France	0	0	0	1	0	1	4	0	0	0	1	0	0	0	0	1	0
Germany	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Italy	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Netherlands	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Norway	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Scotland	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Sweden	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	0
Switzerland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Wales	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Yugoslavia	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
<u>New Zealand</u>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>North America</u>																	
Canada	0	0	1	1	0	0	2	1	1	0	0	0	0	0	0	3	1
Costa Rica	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0
Mexico	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	1
<u>South America</u>																	
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Chile	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Ecuador	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

* If numbers appear on the same line as the continent headings, information regarding specific countries was not given.

Source: This type of member information was only recorded in NARST Newsletters from 1959-1975.

readily available for projects abroad, and that about 1975 such resources were drastically cut. This reduction in funds may partially explain why, after the peak year of 1974 with 45 members reported as working abroad, the numbers fell to 12 in 1975.

The peak year for the sixties was 1965. Thirty-five members were reported in foreign service in science education. When the peak year of the sixties was compared to the peak year of the seventies, the following observations were made. The 45 members reported for 1974 were spread among 32 countries; the 34 of 1965 were serving in 19 countries. The two continents showing the greatest increase in countries represented were Africa and Asia. In 1965, only 2 countries of Asia were indicated as having NARST members; but in 1974 the number had increased to 13. The number of countries in Africa grew from 1 in 1965, to 6 in 1974. During 1965, India was found to have the most NARST members--5 in total. In 1974, Israel and Canada were reported to have the most members--3 each.

In both peak years, Europe maintained a high percentage of the NARST members working in the international scene. However, members reported as working in France generally had their responsibilities tied to the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The first NARST evidence of interest in international relations beyond efforts related to the journal and individual members was found in minutes of the 1961 Annual Meeting in Chicago. Fletcher G. Watson introduced the idea. This sparked responses from other members. Clarence H. Boeck reported a member requesting information about NARST

to be used in his talks in Europe. President Obourn, a science specialist at the USOE, interjected that his counterpart in science education in England expressed interest in NARST programs. He further emphasized that some international relationships should be of programmatic concern to NARST and agreed to refer the area to the new president, Herbert A. Smith.

However, not until after the sixties was a committee for international relations actually established. The first evidence of a NARST International Committee was found in the May 1977 NARST Newsletter. Six members served on this committee, three of which had been appointed in 1976. A policy decision had been made in 1976 to consider the problems of the international member status. The members of the 1977 committee included: J. W. George Ivany (Canada), O. Roger Anderson (New York), Pinchas Tamir (Israel), Michael J. Padilla (Canada), Paul C. Beisenherz (Louisiana), and Willard J. Jacobson (New York).⁴¹

In 1979 the duties of the International Committee were taken over by the Membership Committee. However, the International Committee was later reinstated. By the end of 1989, the International Committee became a standing committee of NARST.⁴² The charge of the committee was to be "responsible for projects focusing on international science education research. The committee will forward, on a semi-annual basis, its recommendations to the Board for action."⁴³ Most of the membership for the committee was to be drawn from outside the United States. In April 1990 a policy was adopted establishing the committee to consist of eight members appointed to two-year terms.⁴⁴

NOTES

- ¹Thomas P. Fraser, "NARST History Questionnaire," 1988.
- ²Herbert A. Smith, "NARST History Questionnaire," 1988.
- ³Paul DeHart Hurd, response letter to Paul H. Joslin, 22 July 1988.
- ⁴NARST, Minutes First Annual Meeting (1928), 277.
- ⁵Eikenberry, "NARST," 198.
- ⁶NARST, Minutes Second Annual Meeting (1929), 281.
- ⁷NARST, Fourth Annual Meeting (1931), 270.
- ⁸Pruitt, "In Memoriam," 465.
- ⁹NARST, Minutes Eighth Annual Meeting (1935), 91.
- ¹⁰Barnes, NARST Newsletter, 3.
- ¹¹Barnes, letter, 3 July 1963.
- ¹²Barnes, NARST Newsletter, 3.
- ¹³Milton O. Pella, "News," NARST Newsletter (October 1963): 3-4.
- ¹⁴Marshall, JRST 1: 288.
- ¹⁵H. Seymour Fowler, ed., "Announcement," NARST Newsletter 17 (March 1975): 2.
- ¹⁶H. Seymour Fowler, ed., "Action by the Executive Board," NARST Newsletter 17 (December 1975): 4.
- ¹⁷Philip G. Johnson, ed., "Changes in By-Laws," NARST Newsletter (Fall 1964): 11.
- ¹⁸H. Seymour Fowler, ed., "Sustaining Membership Proposed," NARST Newsletter 17 (September 1975): 10.
- ¹⁹Fowler, "Action," NARST Newsletter 17 (December 1975): 4.
- ²⁰Wayne W. Welch, "Twenty Years of Science Curriculum Development," Review of Educational Research, ed. David C. Berliner (American Education Research Association, 1979), p. 283.

²¹Ibid., 282.

²²Ibid., 283.

²³Ibid., 283.

²⁴Milton O. Pella, letter to author, 30 July 1991.

²⁵Ibid.

²⁶Ibid.

²⁷Willard J. Jacobson, letter to Paul H. Joslin and author, 25 July 1991.

²⁸Ibid.

²⁹Ibid.

³⁰Pella, letter, 30 July 1991.

³¹Ibid.

³²Ibid.

³³Smith, letter to Paul H. Joslin, 3 August 1991.

³⁴Carleton, NSTA Story, 95-96.

³⁵Ibid., 96.

³⁶NARST, Minutes Fourth Annual Meeting (1931), 269.

³⁷Charles J. Pieper, "Discussion of Mr. Glenn's Paper," 21 Science Education (April 1937): 86.

³⁸Pieper, "The New Science Education," 1.

³⁹Clarence M. Pruitt, "Gerald Spellman Craig," Science Education 40 (April 1956): 181.

⁴⁰Ibid., 180.

⁴¹"Officers and Committee Members," NARST Newsletter 19 (May 1977): 9.

⁴²Patricia E. Blosser, working draft of "Policy Decisions of the National Association for Research in Science Teaching" (28 September 1990): 13.

⁴³Ibid.

⁴⁴Ibid.